NATIONAL MUSEUM OF VICTORIA

THE JOURNAL of The Department OF AGRICULTURE

VICTORIA · · · AUSTRALIA

Vol. XXXV.—Part 3. MARCH, 1937. PRICE, 3D.

Registered at the General Post Office, Melbourne, for transmission by Post as a Newspaper

FOOT-ROT IN SHEEP

For prevention and satisfactory treatment by Foot-bath process—use

"ARZEEN"

Drenching Sheep and Lambs

Formulae recommended by the McMaster Laboratory and State Departments of Agriculture and Stock

USE { "Vallo" Nicotine Sulphate 40% / "Vallo" Neige Copper Sulphate

The most reliable of all Dips

"VALLO" Powder SHEEP DIP

Manufacturers—

VICTOR LEGGO & FARMERS LTD.

Phone: Central 1243 — 222 Queen Street, Melbourne, C.1 — G.P.O. Box 508 H

COPPER CARBONATE!

"Vallo" Anti-Bunt

100 per Cent. Pure

Approved by the various State Departments of Agriculture throughout Australia for Quality and Fineness of Powder———

AS A

DRY PICKLE for SEED GRAIN

Prices and Particulars from

VICTOR LEGGO & FARMERS LTD.,

222 Queen Street, Melbourne, C.1

9 Phillip Street, Sydney — AGENTS IN ALL STATES — 30 Albert Street, Brisbane

Phone: Central 1243 — G.P.O. Box 508 H

NATIONAL MUSEUM OF VICTORIA

Contents.

MARCH, 1937

		PAGE
Dairy Farm Competition—State-wide Contest	*W. J. Yuill*	105
Victorian F.A.Q. Wheat—Analysis of 1937 Sample	*W. R. Jewell, M.Sc.*	118
Seed Certification—Conditions of Scheme	*J. E. Harrison, B.Agr.Sc.*	119
Artificial Fertilizer Inspections	*W. C. Robertson*	124
Ephemeral Fever or "Three Day Sickness" of Cattle		130
Butter Production and Export		133
Botulism in Horses (Forage Poisoning)	*R. N. Wardle, B.V.Sc.*	134
Nhill Crop and Fallow Competition, 1936	*A. J. Vasey, B.Agr.Sc.*	137
Crop and Fallow Competition—Kerang District, 1936	*A. B. Hackwell, B.Agr.Sc.*	143
Selected Yeasts for Winemaking	*D. G. Quinn and C. R. Millikan, M.Agr.Sc.*	147
Orchard and Garden Notes	*E. E. Pescott, F.L.S.*	150
Standard Herd Records		151

Issued under the direction of the Hon. E. J. Hogan, M.L.A., Minister of Agriculture.

COPYRIGHT PROVISIONS AND SUBSCRIPTION RATES.

The Articles in the Journal of the Department of Agriculture of Victoria are protected by the provisions of the Copyright Act. Proprietors of newspapers wishing to republish any matter are at liberty to do so, *provided the Journal and author are both acknowledged.*

The Journal is issued monthly. The subscription, which is payable in advance and includes postage, is 3s. per annum for the Commonwealth and New Zealand, and 5s. for the United Kingdom and Foreign Countries. Single copy, Threepence. Subscriptions should be forwarded to the Director of Agriculture, Melbourne, C.2.

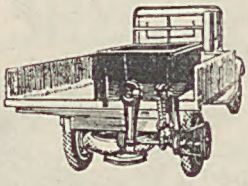
POSTAGE RATES.

The postage required for this issue is:—To Australia and New Zealand, 1d.; to United Kingdom via France, 2d.; to United Kingdom via All-sea route, 1d.; to other British Possessions, 2d.; to U.S.A. and Foreign Countries, 3d.

— SEASONAL EQUIPMENT —

BROADCAST SPREADER

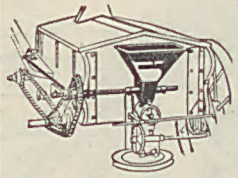
Entirely Self-contained Hopper will hold three or more bags. Has a distributing range of thirty-five feet: will cover a large area each day. Anywhere a horse can go this machine will follow. Specially designed for Rough and Stony and Conditions. Readily convertible to a handy Farm Cart. Grass Seeder can be attached.



BROADCASTER UNIT

Adapted to fit to rear of Motor Truck.

Easily attached and simply operated. Farmer's model holds two bags. Contractor's model holds three bags. Distributor gears enclosed in oil bath. Seeder Attachment available if required. Spreads upwards of 35 feet. Positive feeding assured.



Showing Seed Sowing attachment for Clover, Millet, Lucerne, Rape, etc. The seeding can be done simultaneously with the Broadcasting or sown separately if desired. Adjustments can be made to allow of heavy or light sowing.

HOPPER SPREADER

Single Machines for Horse Haulage.

Coupled Machines for Motor Truck.

A sure, even Sower. Double-gear drive on 9-ft. and 12-ft. widths. Star feed the only positive method of obtaining reasonably accurate quantities per acre.

A special 6-ft. width for Orchardists.

Will sow Lime, Gypsum, or any other Fertilizer, in large or small quantities.

HOPPER SPREADER FOR MOTOR TRUCK

Spreads evenly 16-ft. width at a speed from 10 to 15 miles per hour. Simple right and left hand worm feeds from centre ensure even distribution. Hopper is rigidly stayed and trussed and provided with safety rails for the man feeding.

See Local Agent or Write for Catalogue and Prices.

T. ROBINSON & Co. Pty. Ltd.

Head Office and Works: SPOTSWOOD, W.14, Victoria
Show Rooms: 536-538 BOURKE ST., Melbourne, Victoria
Sydney Depot: RAILWAY PARADE, BURWOOD, N.S.W.

INDEX TO ADVERTISEMENTS

FRONT SECTION

Dunlop-Perdriau Rubber Coy. Ltd. opp. p. 121

General Motors-Holdens Ltd. (Bedford Trucks) vi

Gippsland & Northern Co-operative Coy. Ltd. (Seeds) ... ... opp. p. 120

Goodyear Tyres ... ... opp. p. 112

International Harvester Coy. of Australia Pty. Ltd. (Tractors) v

Law Somner Pty. Ltd. iv

Leggo, Victor, & Farmers Ltd. ... inside cover

McKay Massey Harris Pty. Ltd. iii

Robinson, T. & Coy. Pty. Ltd. ii

Vacuum Oil Coy. Ltd. ... ... opp. p. 113

BACK SECTION

Australian Cement Ltd. ... ... inside cover

Australian Mushroom Industries ... opp. p. 148

Bayer Pharma Ltd., Sydney (Ceresan) opp. p. 140

Cockbill, J. xi

Friesian Bull Calves for Sale viii

Lysaght Bros. & Coy. Ltd. xi

McGregor Wheel Grip and Engineering Pty. Ltd. ... ... outside cover

Red Poll Calves for Sale ... opp. p. 141

Rylands Bros. (Aust.) Ltd. vii

State Savings Bank vii

Stud Breeders' Cards ix

Trewhella Bros. Pty. Ltd. ix

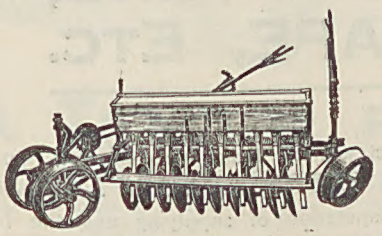
Victorian Railways x

Wills, W. D. & H. O. (Aust.) Ltd. opp. p. 140

SUNSHINE AND MASSEY HARRIS
SEEDING MACHINES

That Save Time, Labour, and Expense

THE SUNDERSEEDER



An excellent combination of the Sundercut Stump-Jump Disc Cultivating Plough and the Sun Grain and Fertilizer Drill, in one strong, durable, efficient machine for general use and especially in conditions where it would be unwise to use a lighter or non-jump machine. Its ability to plough, cultivate, and sow in one operation on land covered with trash, stumps, unburnt stubble, &c., enables the work to be done speedily and inexpensively, and is of especial value to sow oats quickly to provide green feed for stock. Ploughs and cultivates 5 feet wide (6-inch furrows) ; sows seed and fertilizer in 10 rows, 6 inches apart; a wide range in quantities can be sown; depth of sowing is adjustable—deep or shallow; sowing is uniform throughout, and the seed is covered perfectly.

10-disc, with Team Levers .. £71 0 0

Also obtainable with tractor levers at a small extra cost. Ask for the SUNDERSEEDER LEAFLET for full details.

SUNTYNE
COMBINED SPRING-TYNE CULTIVATOR AND GRAIN AND FERTILIZER DRILL

Known as the Combine, and requires less outlay than is necessary for two separate related machines, and enables the user to make the most of a timely rainfall. Pre-eminent in its single and double operations, it cultivates all the surface—no weeds missed—pulverizes the soil and makes an ideal seed-bed—level, compact, with the finer soil below and the right soil-mulch to cover the seed. Sows seed and fertilizer at a uniform depth—deep or shallow—covers perfectly, puts the seed in the right place for quick germination and a good start, with space for development of strong, healthy plants. The famous Sunflex jointed floats provide a stump-jump action to the tynes, thereby reducing tyne breakage to the minimum. Tynes take points of various widths, and special 1¼" points for renovating lucerne are available for rigid tynes, which can be fitted in place of spring tynes for use in country free of stumps, &c. Rigid tynes increase the cost a little more than the prices below.

Row	*Tynes*	*Cut*	*Price*
8	17	5-ft.	£45 0 0
12	25	7½-ft.	£58 0 0
14	29	8½-ft.	£65 0 0
16	33	9½-ft.	£70 0 0

Also, 20 and 24 row sizes. Seed boxes for sowing rape, lucerne, &c., obtainable at small extra cost. Ask for the SUNTYNE CATALOGUE, for full details.

Prices are for delivery at Sunshine. Discount for cash 2½%, or liberal extended terms can be quoted.

Ask the local agent, or write to us for the descriptive catalogue and complete price list—free and post free.

H. V. McKAY MASSEY HARRIS Pty. Ltd.

SUNSHINE HARVESTER WORKS, SUNSHINE, W.20, VIC.

LAW SOMNER PTY. LTD.

Established 87 Years

Seedsmen and Nurserymen

OUR SPECIALITY:

GRASSES & CLOVERS, LUCERNE, RAPE, ETC.

DON'T GAMBLE ON CHEAP SEED. Protect yourself from weed-infested, poor-growing pastures by sowing ***GOVERNMENT CERTIFIED SEEDS,*** supplied by ***LAW SOMNER PTY. LTD.,*** who for 87 years have maintained the reputation of supplying only the best strains of the purest seed.

"Quality" and "Purity" are assured, for Law Somner Pty. Ltd. have their own machine seed-cleaning plant and seed-testing laboratory.

We supply the following Government Certified Seeds:—

PERENNIAL RYE GRASS—Hawke's Bay N.Z. Govt. Certified "Mother" and "Permanent Pasture" Seed. Victorian Government Certified Seed—Clunes, Colac, and Kyneton.

CLOVERS—Subterranean Late Tallarook. Early Dwalganup. New Zealand White Clover. Late Montgomery Red. Phalaris Tuberosa.

COCKSFOOT N.Z. "Mother" and N.Z. "Akaroa."

SPECIAL NOTICE.

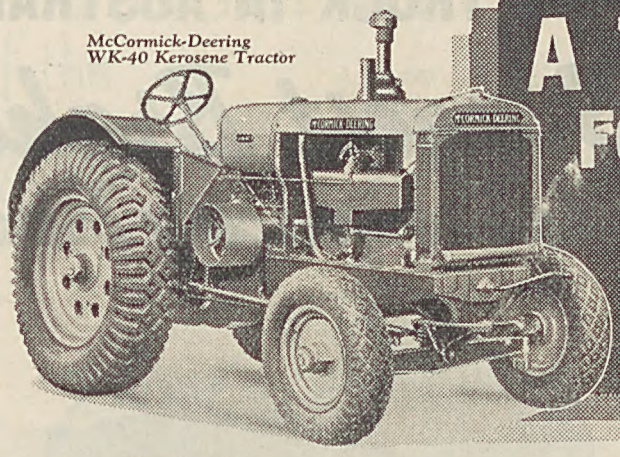
"SOMNER'S" PASTURE BOOK Available early in March contains—Detailed information and prices of every Grass and Clover used in the establishment, sowing and management of modern pastures; also informative articles on ensilage; manuring of pastures; pasture mixtures suitable for different climatic and soil conditions; Trees for breakwinds and plantations. In fact, a book no grazier or farmer can afford to be without.

POSTED FREE ON APPLICATION. AVAILABLE EARLY IN MARCH.

FREIGHT PAID.—FREIGHT PAID ON ALL CASH ORDERS OF £2 AND OVER (except Seed grain, Roots, Peas, and Beans). BAGS ARE FREE, Nett Weight only charged for, and we will pay freight (GOODS TRAIN ONLY) to any Station in Victoria. Interstate Clients—on orders of £5 and over.

Address—

LAW SOMNER PTY. LTD., 21-23 Elizabeth St., Melbourne



A TRACTOR FOR EVERY FARM!

Prices from

£199 up

A TRACTOR FOR YOUR FARM

Out of its vast experience extending over 105 years, International Harvester—the World's largest tractor builder—has succeeded in developing a line of tractors that makes possible the successful utilization of low-cost power on farms of all sizes. This comprehensive line of tractors brings to all farmers—the small farmer as well as the man with the large acreage—the benefits and the conveniences of modern power delivered with a certainty and economy which makes farming more profitable.

There's a tractor in the McCormick-Deering line that will fit exactly into your farming operations. Write us for catalogues or call on your McCormick-Deering agent and talk the matter over with him. He will be pleased to tell you about the McCormick-Deering tractor that will suit you.

BIG POWER FOR BIG FARMS

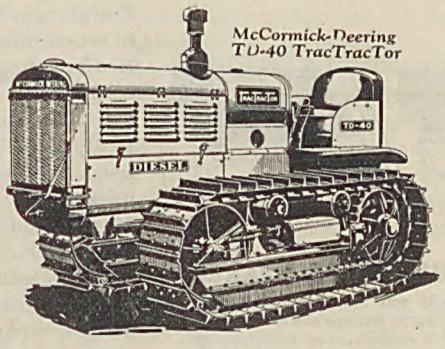
Where plenty of power is needed—power that will speed up big-scale operations on large properties—International Harvester offers you the McCormick-Deering Diesel-powered WD-40 tractor, the WK-40 tractor which operates on kerosene and the TD-40 Diesel-powered TracTracTor. What more can you want in the way of big power?

MEDIUM POWER FOR MEDIUM FARMS

Represented by the 10-20 and the W-30 tractors and the T-20 TracTracTor, the McCormick-Deering range of medium-sized tractors includes a size and type that will exactly meet the needs of the man with the medium-sized farm and which will serve him well and faithfully on a wide variety of jobs. All of these models operate on power kerosene.

SMALL POWER FOR SMALL FARMS

The versatile McCormick-Deering 12 Series tractors—the W-12, O-12 and F-12—are International Harvester's answer to the demand for economical power for the small farm. Operating on low-cost kerosene, these wonderful little tractors are a splendid proposition for mixed farms, orchards, vineyards, and other small properties.



McCormick-Deering
TD-40 TracTracTor

STEEL WHEELS OR PNEUMATIC TYRES.

Do you prefer pneumatic tyres or steel wheels on your tractor? All McCormick-Deering wheel tractors can be furnished with steel wheels or pneumatic tyres.

14 DIFFERENT MODELS.

In addition to farm tractors, the McCormick-Deering line also includes a complete range of tractors for all kinds of industrial and municipal work—14 different models in all.

INTERNATIONAL HARVESTER COMPANY OF AUSTRALIA PTY. LTD.

(INCORPORATED IN VICTORIA)

BUY A 543-555 BOURKE STREET, MELBOURNE, C1

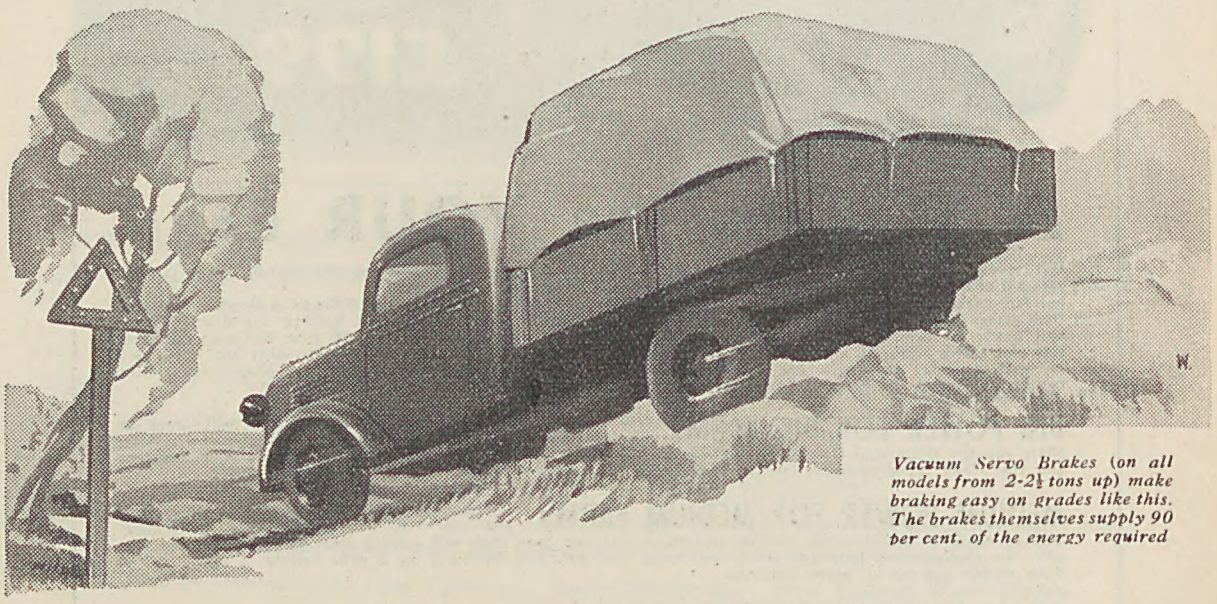
B137

McCORMICK-DEERING

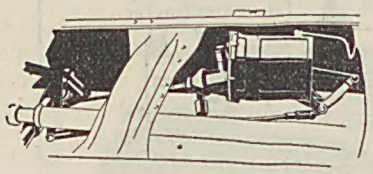
THE WORLD'S BEST TRACTOR INVESTMENT

THE LOWEST-PRICED TRUCK IN AUSTRALIA

with the Biggest Brakes of any similar capacity Truck



Vacuum Servo Brakes (on all models from 2-2½ tons up) make braking easy on grades like this. The brakes themselves supply 90 per cent. of the energy required



VACUUM SERVO BRAKES

on all 2-2½ ton and 3-4 ton models. Vacuum Servo Brakes are standard on all Bedford models from 2-2½ tons up. They bring sure and positive tiptoe braking even at the highest speeds and with the heaviest loads on board.

GENERAL MOTORS - HOLDEN'S LIMITED

Compare values before you buy a truck . . . and you'll do as hundreds of truck men are doing . . . buy a Bedford. For, as these men know, Bedford previously sold for more than either of its two principal competitors. Yet to-day, because of the tariff, Bedford actually costs less than each of them. It's the same sturdy New-Design English Bedford . . . with the same features that have made it the most popular truck in Australia with big fleet owners . . . slow-wearing oversize brakes, for instance. Bedford's braking area is 258 square inches on 30-cwt. and 2-2½ ton models . . . no less than 350 square inches on 3-4 ton models. If you have not yet seen a copy of the big Bedford catalogue with its details of Bedford's new shorter wheelbase design and many mechanical features, send for one immediately to your nearest Bedford distributor.

A model for every purpose from 8 cwt. to 4 tons.

CHASSIS PRICES

8 cwt. models from	£210
12-15 cwt. models from	£252
30 cwt. models from	£272
2-2½ ton models from	£299
3-4 ton models from	£350

(All Prices plus Sales Tax)

A12B

ENGLAND'S *New-Design* BEDFORD

CONSULT YOUR LOCAL AUTHORIZED BEDFORD DEALER

NATIONAL MUSEUM OF VICTORIA

The Journal of the DEPARTMENT of AGRICULTURE of VICTORIA

Dairy Farm Competition

State Wide Contest

By W. J. Yuill, Supervisor of Herd Testing

THIS State-wide Dairy Farm competition is controlled by the Council of the Herd Testing Movement and judged by the senior officers of the Dairying Division of the Department of Agriculture. Perhaps the best proof of the usefulness of this competition is afforded by the fact that it has been running for a period of six years and, further, that a record entry was received for the 1936 competition.

From time to time, as experience has suggested, some revision of the original scheme has been made by the Central Executive of the Herd Testing Movement. In this competition, which embraces every aspect of the dairy farm and home, the Central Council has included much of the general policy of the Department of Agriculture.

Seeing that the scheme has been in operation for so long, it may not be too early to ask—What general deductions can be made concerning its utility? In answer we may quote the opinion of Mr. C. G. Howey, the President of the Victorian United Cow Testing Association, who has a wide experience of the industry in this state. Mr. Howey considers that no other single factor has had such a wide-reaching influence on the purely producing section of the industry. The Zone Competitions have been won by some remarkably efficient dairymen, whose farms have been inspected by many thousands of visiting farmers at one or other of the extensive chain of field-days organized by either the local or the central body of herd testing. Mr. Howey added that it would not be too much to claim that more worth-while information had been disseminated throughout the dairying areas by the field-days—which had been held on the excellent farms discovered by the competition—than in any other way.

Mr. A. Stephen, one of the judges, claims that the competitions have stimulated a general forward movement in every aspect of farm management. Mr. R. Roy, Senior Dairy Supervisor of northern Victoria, reports a marked improvement on all competing farms. He claims that if the improvement noted in the dairy equipment of the farms inspected by him were general, a considerable improvement in the quality of Victorian butter would surely follow. Mr. A. Holmes, Senior Dairy Supervisor on the main Gippsland line, refers to the splendid work of farm-planning, of sub-division, of ensilage-making, and bookkeeping. Senior Supervisor D. R. McKenzie gives unstinted praise to the splendid herd sires, the remarkable returns from the select dairy herds, and also the excellent pastures on the farms inspected in Zone 3. Senior Supervisors L. P. Ingham, A. Mess, and the writer, add their quota of praise of these and other aspects of the competition, not the least of which has been the steady development of better home services.

The competition for the Zone Championship and possession of the C.F.C. shield, which is awarded to the zone the best four farms of which obtain the highest aggregate of points, was won by Zone 4 with Zone 3 in second place. This is the second year in succession that Zone 3 has

Portion of Mr. P. Freestone's herd which, over a period of eight years, has had an average production of 403 lb. butter-fat (without allowances). Mr. Freestone owns the champion farm for 1936.

occupied second place, but on this occasion it supplies also the champion farm of the State, Mr. P. Freestone, of North Murchison, being the successful farmer. Mr. T. E. Bond, Cohuna (Zone 1), occupied the position of reserve champion.

Competition for "Champion Zone" and Possession of C.F.C. Shield—Best Four Farms in Zone.

FIRST—ZONE 4.

T. E. Bond	936
J. D. Pierce	904
H. E. Keele and Son ..	884
R. G. Anderson	863
	3,587

SECOND—ZONE 3.

P. Freestone	946
J. Bullingham	929
J. B. Watson	840
J. W. Reid	805
	3,520

The four leading competitors in Zone 4 will each receive a silver-mounted blackwood miniature of the "C.F.C. Shield."

Champion Farms.

(Prizes, £10 10s. and £5 5s., donated by Meggitt's Ltd.).

P. Freestone, North Murchison Association	946
T. E. Bond, Cohuna Association	936

Farm Competition Zones.

The 113 Herd Testing units throughout the State are grouped into 10 zones as follow:—

Zone No. 1—Walwa, Upper Murray, Tallangatta, Eskdale, Kiewa Valley.

Zone No. 2.—Myrtleford, Moyhu, Milawa, Swanpool, Alexandra, Euroa.

Zone No. 3.—Stanhope, North Murchison, North Shepparton, Tongala, Werribee, Undera.

Zone No. 4.—Cohuna, Leitchville, Kerang, Swan Hill, Pyramid Hill, Rochester, Calivil.

Zone No. 5.—Coleraine, Casterton, Wurt Wurt Koort, Condah Swamp, Portland, The Sisters, Mortlake, Warrnambool, Paschendale, Woodford, South Glenelg, Macarthur.

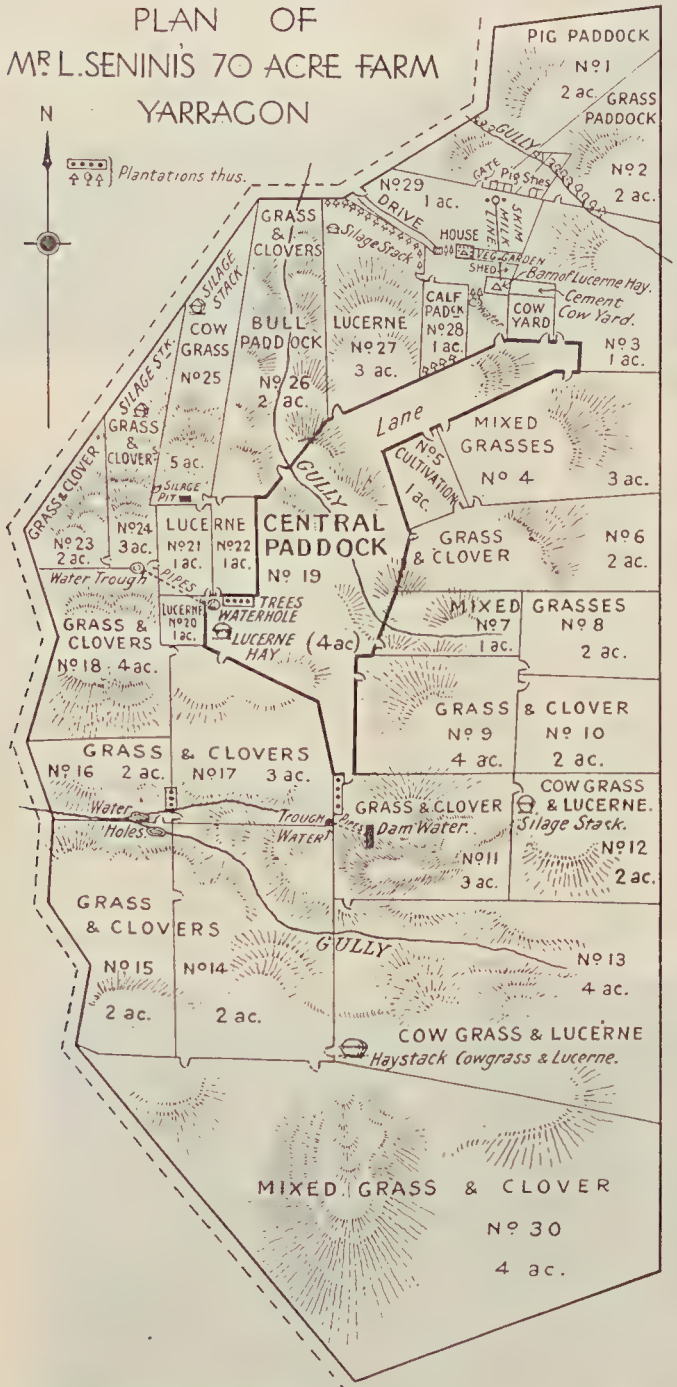
Zone No. 6.—Pomborneit, Nalangil, Beeac, Ondit-Irrewarra, Apollo Bay, Winchelsea, Dreeite, South, Ballarat, Newstead, Noorat, Camperdown, Keayang, Cobden, Bacchus Marsh, Ecklin South, Geelong, Gellibrand Valley, South Purrumbete, Port Campbell.

Zone No. 7.—Orbost, Bairnsdale, Sale, Maffra, Traralgon, Yinnar.

Zone No. 8.—Warragul, Gainsborough, Jindivick-Neerim, Narracan, Boolarra, Mirboo North, Pakenham, Bunyip.

Zone No. 9.—Yarram, Toora and Welshpool, Stony Creek, Dumbalk North, Dumbalk, Tarwin Lower, Leongatha, Fish Creek, Foster.

Zone No. 10.—Wonthaggi, Loch, Mountain View, Kongwak, Poowong, Lang Lang, Korumburra Peninsula.



A special feature of this excellent farm lay-out is the central paddock which is connected with 15 paddocks and the cow-yard.

Features of Development.

Farm layout for the easy control of stock has been one of the features that has received special attention. The "ring-fence" type of farm, with the home and dairy buildings standing out in the one big paddock, have largely disappeared. Messrs. J. A. Ford and H. Haywood each received the full 100 points in this section, made up as follows:—Farm layout 50, shade and shelter 20, condition of equipment 20. Plans of these farms appeared in previous competition reports (February, 1935, and February, 1936, respectively). In passing, it should be said that these plans have been used a good deal by men who are building up a sound system of farm planning.

A plan of Mr. L. Senini's 70-acre farm (Narracan Association) appears on this page. When Mr. Senini took over this farm fifteen years ago it was covered with bracken and undergrowth, and eaten out by rabbits. No cows could be carried during the first year, but to-day a herd of 40 milkers and other stock are maintained. Country similar to that owned by Mr. Senini is illustrated on the following page. One and a quarter bags of superphosphate per acre is applied annually, and Mr. Senini is an ardent advocate of silage. The gross return from this farm for 1936 was £12 per week.

Messrs. A. E. Barton, L. Senini, A. Crossthwaite, Dr. J. L. Henderson, H. E. Keele and Son, J. D. Pierce, H. Parish, A. E. Langford, W. Henderson junior, Mrs. D. Jenkins, Mrs. A. V. Hardie, L. Mayo, J. R. Manson, E. W. Langford, and W. F. Treasure, scored 95 points or over. Some of the other entrants scored the full 50 points for farm layout, but indifferent fencing, bad gateways, or insufficient shade and

shelter lost them a number of points. The ingenuity and individuality of the farmer is sometimes expressed in the manner that a stock and domestic water supply is laid on to the farm. The remarkable water supplies of Mr. H. Haywood of Casterton, Mr. J. A. Ford, Kiewa, and Mr. H. Parish of Winchelsea, have excellent features which have been referred to in previous reports.

Messrs. H. Keele and Son, T. Bond, R. Anderson, Major Brothers, P. Freestone, J. Bullingham, W. Watson, and J. Reid, are irrigation farmers who have had little difficulty in securing water for stock in all paddocks, and they also have provided a fine domestic supply. Mrs. D. H. Jenkins, Messrs. E. and J. Harney, and A. J. Rogers of Zone 5, scored the full twenty points awarded for water system. In other areas, men have harnessed the springs in the hills to a gravitation system, or, like Mr. J. Ford of Kiewa, have set that "tireless water-carrier," the hydraulic ram, on to the job of supplying the water needs of the home and stock.

Mr. J. H. B. Morris, of Apollo Bay, has an excellent water system for his stock. Mr. Morris's farm is situated on the steep hills at Skene's Creek. To provide an easy, accessible, and permanent water supply for the herd, a special hydraulic ram has been set at a point 200 feet below the sheds. Twelve hundred gallons of water are lifted daily to a reserve tank at the dairy buildings, where a "candy" trough in the receiving yard forms part of the new water scheme. Generally, windmills are used to lift the water supply to an overhead tank, from whence it is reticulated to the points of service about the sheds, yards, troughs, gardens, and home. An outstanding illustration of a splendid water system is to be seen at Mr. H. Parish's farm at Winchelsea, where there are 23 points of service in addition to a number of troughs and dams.

Bookkeeping and Farm Accounts.

This feature is unusually well developed in Zone 7, where Mr. J. R. Manson's share-farms are excellently served; also on the properties of Messrs. E. Boardman, S. Ross, W. Treasure, and E. Langford. Mr. F. Johnson's bookkeeping was a special feature in Zone 6, while Messrs. P. Freestone, J. Bullingham, J. Watson, and J. Reid of Zone 3, each scored the full points, as also did Mr. T. E. Bond of Cohuna and Mrs. A. V. Hardie of Warragul. Mr. A. Crossthwaite of Kiewa is always successful in this section also.

Use of Concrete.

Never in the history of the industry has there been such a general use made of concrete for cowsheds, yards, gateways, approaches, and exits. In some instances, where a heavy congregation of stock is inevitable, the narrow concrete pathway or "walkaway" has been introduced and found to be a valuable aid in alleviating the mud nuisance.

Mr. A. E. Barton, of Kiewa Valley, once again scored the highest points in the dairy sanitation section. His bailing yard of 27 feet x 18 feet, and his outer receiving yard of 56 feet x 36 feet, together with the main fencing posts, drainage, shed floors, and an extensive walkaway in front of the walk-through section of the shed, are all made of concrete. Mr. J. A. Ford's entry is similar, as is also that of Mr. A. Crossthwaite. Mr. A. J. McDonald, of Moyhu, also has an extensive concrete area in his bailing and

Mr. L. T. Jones' farm, Dumbalk North, winner of Zone 9.

Portion of Mr. J. H. Morris' farm, which is situated on steep hills at Apollo Bay.

receiving yards as well as the sheds, and a wide walk-through and walk-away. The pig section has a considerable area of concrete also, and is connected to the dairy buildings by a 3-ft. concrete track, which is 140 feet in length.

Mr. A. T. James, of Swanpool Association, also has a highly developed concrete sense. His splendid sheds, yards, and drainage, are worth going a long way to see. In addition, there is an excellent hot-water service with steam under pressure. By the simple procedure of burying a 40-gallon petrol drum several feet in the earth and connecting the water service to the top, and taking a lead out at the bottom and bringing this to a point near the cream cooler, a bountiful supply of cold water is available for the essential work of cream cooling.

Messrs. P. Freestone, J. Bullingham, and J. B. Watson, of Zone 3, Mrs. Jenkins of Woodford, Messrs. J. Taylor and H Parish of Winchelsea, and Mrs. Scott of Geelong, all have extensive areas of concrete about their sheds and yards. Mr. L. T. Jones, of Dollar, and Mrs. H. V. Hardie, of Warragul, each have laid down large areas of concrete yarding and footpaths. Mr. B. J. Boardman, of Yinnar, has done likewise. Of this farm, the judge says that there is a place for everything and that everything is in its place. This is true also of Messrs. H. Haywood of Casterton, J. B. Watson of Zeerust, and J. W. Reid of Murchison, and to a lesser degree on many other competing farms. Each of Mr. J. R. Manson's farms at Maffra are strongly commended by the judge for their sound planning and concrete areas.

A score of 100 points in Section C indicates a high degree of excellence in dairy work and control of the product. Mr. Barton's 104 of the possible 105 points was the highest award made in the whole of the State. This score was followed closely by those of Messrs. A. T. James, Dr. J. L. Henderson, J. Bullingham, J. B. Watson, H. Parish, and Mrs. J. M. Scott, all of whom scored 103 points. Messrs. J. A. Ford and H. Haywood were one point behind, with Messrs. J. Taylor, A. Crossthwaite, and W. Henderson close up. There were many other excellent entries which failed to exceed 100 points because of some one weak section.

Nine of the contestants in Zones 1 and 2 have an excellent service in their dairies; in addition to steam under pressure and steam jets for sterilizing the dairy equipment, provision is made for a wash-up trough, draining rack, and a lead of steam to the machine pipe lines. In other zones also, this feature is developing. It is a special point of interest in Mr. H. Parish's new dairy equipment and will be featured at the Annual Herd Test Field-day in September next.

Farms with steam boilers and flowing steam plants are increasing in numbers, while ample supplies of boiling water from set-in coppers is a common feature of good farms. Detached

A clean shady spot well removed from the dairy yard is an ideal place for a cream storage.

Winners in each of the ten Zones, with Details of the Various Sections.

(* Denotes Winners of Previous Competition.)

Sections.	P. Freestone,* North Murchison Association.	T. E. E. Bond,* Cohuna Association.	L. T. Jones,* Dumbalk North Association.	N. S. Terrier,* Winchelsea Association.	R. McG. Jamieson, Kiewa Valley Association.	L. Senini,* Narracan Shire Association.	B. J. Boardman, Yinnar Association.	Dr. J. L. Henderson,* Mllawa Association.	H. Haywood,* Casterton Association.	M. O. Bunn, Korumburra Association.
Farm Layout	87	90	90	90	88	94	91	95	100	90
Water System	20	20	19	19	17	19	18	20	20	19
Bookkeeping	20	20	18	17	16	18	20	19	19	19
Home	19	16	20	19	18	20	18	19	16	18
Section "B"	146	146	147	145	139	151	147	153	155	146
Sheds, Yards, Drainage, &c.	66	62	63	65	60	60	61	68	67	67
Dairy and Methods	30	34·5	33	33	33	34	33	35	35	32
Section "C"	96	96·5	96	98	93	94	94	103	102	99
Herd Sires	36	35	36	34	36	38	38	35	36	37
Sire's Ancestry	13	8	14	12	18	11	12	10	15	12
Sire's Progeny	40	40	28	29	40	16	22	..	12	40
Herd Production	50	50	50	50	50	50	50	50	50	45
Herd Development	33	33	28	31	21·5	24	21	17	19	23
Herd Replacement	9	20	18	5	11	5	5	13	10	20
Herd Quality	28	26	29	26	26	25	27	26	27	28
Control of Sire	10	9	9	9	8·5	8	10	9	10	9
Section "D"	219	221	212	196	211	177	185	160	179	214
Pigs and Housing	38	38	47	43	42	40	33	45	43	42
Poultry and Housing	15	16	20	17	14	16	14	14	16	14
Section "E"	53	54	67	60	56	56	47	59	59	56
Carrying Capacity	25	24·5	25	24	26	25	26	26	25	23
Fodder Reserves	50	49	50	50	50	50	50	50	50	40
Pastures	95	90	94	75	81	96	86	88	93	92
Fertilizing	100	100	100	100	100	100	100	100	100	37
Section "F"	270	263·5	269	249	257	271	262	264	268	192
Section "G"—Net Return per £100 of Farm Value	162	155	135	126	112	110	121	105	81	75
Grand Total	946	936	926	874	868	859	856	844	844	782

dairies set in a clean, cool, non-dusty environment are also appreciated by the judges, as is also an ample cream cooling service.

Breeding and Production.

The contest in this section of the competition was a very keen one in every zone. This was to be expected, since it caters for that phase of farm activity which is based on herd-test work. The revised conditions of the competition provide 100 points for the herd sires sub-section. This is made up of 10 points for registration, 20 points for breed—type and conformation, 10 points for the quality of his daughters, 20 points for ancestral production, and 40 points for the production of his daughters when compared with their dams. In this section, which deals with herd sires, it sometimes is necessary to review the young untried bull and the aged proven herd sire.

"Ballara Lassie's Masterpiece," owned by Mr. J. D. Pierce of Rochester; Mr. J. A. Ford's "Belgonia Propeller"; Mr. A. E. Barton's "Beauty's King of Staghorn"; Mr. A. Crossthwaite's "Springhurst Furious"; Mrs. Scott's "Staghorn Observer"; Messrs. H. E. Keele and Son's "Maiwand Noble Duke"; Mr. E. Stableford's "Allambee Merry Boy"; Mr. J. Bullingham's "Eurobin King Banfield"; Mr. P. Freestone's "Banyule Double Purple"; Mr. J. B. Watson's "Jerseyholm Island King 2nd"; Mr. J. H. Morris's "Jerseyholm Island King 18th"; Mr. J. R. Manson's "Paisley Shaster Boy"; and several other bulls all scored high on appearance and the inspection of their progeny. However, when the figures of the Equal Parent Index were considered, it was found that a considerable alteration in the awards had to be made. "Ballara Lassie's Masterpiece" still held his place, his first ten daughters having an average yield of 539 lb. butter-fat—their respective dams being 470 lb. He scored 93 of the possible 100 points. "Maiwand Noble Duke" scored 90.5 points, his first ten daughters averaging 47 lb. better than their 455 lb. butter-fat dams. Mr. Jamieson's "Werribee Research Farm" Red Poll had six daughters that averaged 415 lb. ex dams with a 270-lb. average. Mr. M. O. Bunn's "Grangelea Daisy Boy" has but five daughters in the herd, but they have a lead of 155 lb. over 300 lb. butter-fat dams. Mr. G. Bright's "Soliel of Aveley" has sixteen daughters, which averaged 516 lb. butter-fat from dams that averaged 421 lb. "Jerseyholm Island King 11th," "Jerseyholm Island King 18th," and "Jerseyholm Island King 2nd" all have excellent production indices. The last two bulls are full brothers from "Lady Marge of Jerseyholm," a cow with a five-year average yield of 530 lb. butter-fat.

"Jerseyholm Island King 18th," a proven sire in Mr. J. H. Morris' herd.

Mr. J. Beattie of Dumbalk has a promising herd sire in "Warrawee Fox's Hero." His nine daughters averaged 393 lb. butter-fat to exceed their dams by 60 lb. Mr. Bullingham's Friesian bull, "Eurobin King Banfield," has daughters which average 44 lb. higher than their 400-lb. dams. His Equal Parent Index is therefore 488 lb. butter-fat. "Beauty's King of Staghorn" had a marked influence in Mr. A. E. Barton's herd at Kiewa. Thirteen junior daughters averaged 343 lb., while seven mature ones averaged 471 lb. (including "Jessie," 608 lb., top cow of the Association and one of the "top twenty" of the state for 1936). "Avelon Mercedes Chief 16th" has a 416-lb. index in the herd of Mr. A. J. McDonald of Moyhu, while the interstate-bred bull, "Wagga Ariadne's Noble," left 409-lb. daughters ex 372-lb. dams in the well-known herd of Messrs. E. and J. Harney of Warrnambool. "Billy Boy" and "Barney," two unregistered Jerseys, also have excellent indices. The former is owned by Mr. S. Ross of Sale Association. This bull's first seventeen daughters show a 96-lb. butter-fat increase over their 339-lb. butter-fat dams, while "Barney," in Mr. F. Johnson's herd, Winchelsea, has sixteen daughters

Mr. W. A. Henderson Jnr's. Ayrshire herd.

whose 42 records show an increase in the average test and milk yield, so that he has a production index of 415 lb. butter-fat. A feature of this bull's daughters is the evenness and quality of their udders. The herd sire of Mr. R. J. Anderson, of Rochester, was bred in Mr. H. E. Keele's herd; his butter-fat index being 469 lb.

Although there have been some unexplainable failures, where bulls with good butter-fat backing have failed to raise the yield in mediocre herds, it will be seen that, quite generally, the most successful bulls have been bred in well-known Standard Herd Test herds. One bull lowered the yield of his daughters by more than 100 lb. butter-fat, while other bulls failed by more than 50 lb. in the average yield of all their daughters.

Winning Farms in Section "B".

(A prize of 10 cwt. superphosphate, donated by Commonwealth Fertilizers and Chemicals Ltd., will be presented to the winner in each Zone.)

Farm layout, 50 points; shade and shelter, 20 points; condition of equipment, &c., 30 points; bookkeeping, 20 points; water system, 20 points; home, 20 points; maximum, 160 points.

Zone.	Name of Competitor.	Association.	Points.
1	A. E. Barton ..	Kiewa Valley ..	154
2	H. W. Lester ..	Swanpool ..	145
3	J. Bullingham ..	Tongala ..	148
4	J. D. Pierce ..	Rochester ..	148·5
5	Mrs. D. H. Jenkins	Woodford ..	156
6	Hy. Parish ..	Winchelsea ..	154
7	W. F. Treasure ..	Sale ..	152 (equal)
	E. W. Langford ..	Sale ..	
8	Mrs. A. V. Hardie	Warragul ..	150
9	D. Spencer ..	Leongatha ..	147
10	M. O. Bunn ..	Korumburra ..	146

Winning Farms in Section "C".

(A "two-guinea order," donated by D. and W. Chandler Ltd., Hardware Merchants, will be presented to the winner in each Zone.)

Sheds, yards, gateways, approaches, drainage, water heating, milking methods, separator, utensils, milk and cream storage, cooling methods—maximum points, 105.

Zone.	Name of Competitor.	Association.	Points.
1	A. E. Barton ..	Kiewa Valley ..	104
2	A. T. James ..	Swanpool ..	103
3	J. Bullingham ..	Tongala ..	103
4	H. E. Keele and Son	Rochester ..	98·5
5	W. A. Henderson, (junior)	Woodford ..	100
6	Hy. Parish ..	Winchelsea ..	103 (equal)
	Mrs. T. M. Scott ..	Geelong ..	
7	B. J. Boardman ..	Yinnar ..	94
8	Mrs. A. V. Hardie	Warragul ..	99
9	D. Spencer ..	Leongatha ..	95
10	M. O. Bunn ..	Korumburra ..	99

Winning Farms in Section "D".

(A £2 2s. cash prize, donated by the proprietors of *Live Stock Bulletin*, will be presented to the winners.)

Registered sire, type and quality of daughters, 40 points; production ancestry, 20 points; production index of sire's daughters, 40 points; tested cows and production of nominal butter-fat per £100 of farm value, 50 points; development of herd's production, 40 points; proportion of junior to mature cows, 20 points; inspection of herd, 30 points; bull control, 10 points; maximum points, 250.

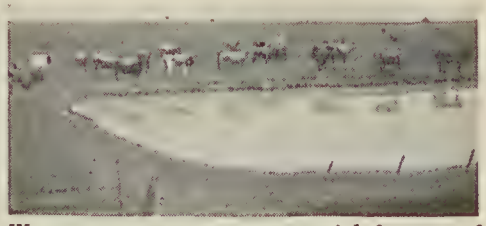
Zone.	Name of Competitor.	Association.	Points.
1	R. McG. Jamieson ..	Kiewa Valley ..	211
2	A. T. James ..	Swanpool ..	185
3	J. Bullingham ..	Tongala ..	214
4	J. D. Pierce ..	Rochester ..	240
5	E. and J. Harney ..	Warrnambool ..	196
6	J. H. B. Morris ..	Apollo Bay ..	192
7	S. A. Ross ..	Sale ..	190
8	Mrs. A. V. Hardie	Warragul ..	183
9	J. Beattie ..	Dumbalk ..	208
10	M. O. Bunn ..	Korumburra ..	214

Winning Farms in Section "E".

(A cash prize of £1 1s., donated by Pig Breeders' Societies of Victoria, will be presented to the winners.)

Registered boar, 5 points; quality of progeny, 10 points; appearance and quality of herd, 25 points; housing and control, 10 points; poultry, 10 points; housing, 10 points; maxmum points, 70.

Zone.	Name of Competitor.	Association.	Points.
1	A. E. Barton ..	Kiewa Valley ..	63
2	A. J. MacDonald ..	Moyhu ..	68
3	J. W. Reid ..	North Murchison	53
4	H. E. Keele and Son	Rochester ..	63
5	E. and J. Harney ..	Warrnambool ..	41
6	Hy. Parish ..	Winchelsea ..	68
7	J. R. Manson and Son (No. 1 Farm)	Maffra ..	63
8	Les. Mayo ..	Narracan ..	58
9	D. Spencer ..	Leongatha ..	63
10	H. A. Wettenhall ..	Korumburra ..	64



Water reserves are an essential feature of a dairy farm.

The Only TRACTOR TYRE Giving *All-way-Traction*

PLUS THESE!

50% MORE TRACTION

Wide flat tread! Deep-cut diamond blocks! Long lug bars!

100% MORE SHOULDER TREAD

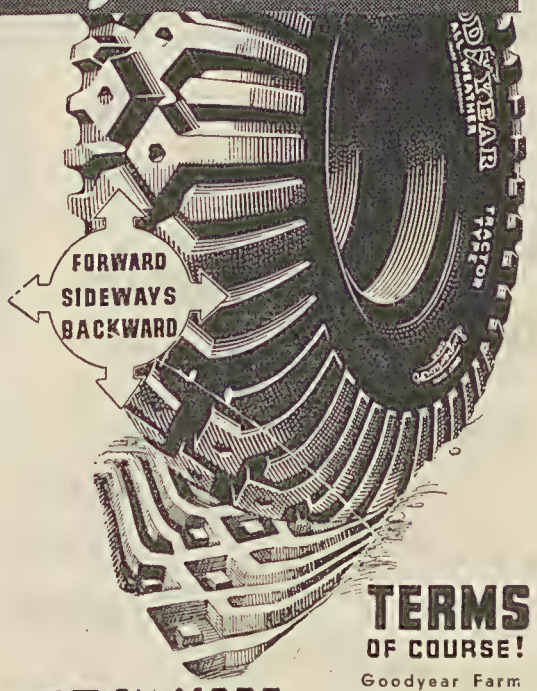
Thick lug bars around the shoulders! Deep notches!

30% BETTER CLEANING

Wide bevelled grooves force out mud! No dust!

30% MORE DRAWBAR PULL

Increased non-skid depth! More ground contact.



48% MORE RUBBER

Greater strength! Longer life! More puncture resistance!

TERMS OF COURSE!

Goodyear Farm Tractor Tyres and Wheels are available on Hire Purchase Terms. For full particulars write to the Goodyear Branch (in all capital cities).

THE NEW GOODYEAR

ALL-WAY-TRACTION TRACTOR TYRE

10-T3-37

KNOCKING POUNDS THE PEP OUT OF YOUR ENGINE . . .

ONLY HIGH ANTI-KNOCK PETROL CAN GIVE FULL KNOCKLESS POWER

The mechanical brutality of knocking makes men who appreciate good engines shudder at the sound. Knocking—caused by ordinary petrols - batters vital parts and robs engines of their power. Change to Super Plume Ethyl and enjoy full knockless power, maximum mileage and lessened depreciation because of complete absence of knocking.

Super Plume Ethyl

For KNOCKLESS Power

Mr. P. Freestone's cow-shed and fodder reserves. Note the 25 "feeders" in front of stack.

Winning Farms in Section "F".

(A prize of 10 cwt. of superphosphate, donated by Commonwealth Fertilizer Co., will be presented to the winner in each Zone.)

Farm value per cow, 30 points; fodder reserve, 50 points; pasture and legume areas, 100 points; fertilizing, 100 points; maximum points, 280.

Zone.	Name of Competitor.	Association.	Points.
1	S. J. Edwards ..	Kiewa Valley ..	267
2	W. J. O'Brien ..	Moyhu ..	269
3	J. Bullingham ..	Tongala ..	276
4	H. E. Keele and Son	Rochester ..	270
5	W. A. Henderson (junior)	Woodford ..	268
6	F. Johnson ..	Winchelsea ..	261
7	A. E. Langford ..	Sale	270
8	Chas. Dineen ..	Narracan ..	261
9	D. Spencer ..	Leongatha ..	266
10	J. A. J. Wadelton	Peninsula ...	269

Winning Farms in Section "G".

(A cash prize of £1 1s. donated by the Baltic Simplex Co., will be presented to the winners.)

Maximum points, 180.

Zone.	Name of Competitor.	Association.	Points.
1	B. H. Roper ..	Kiewa Valley ..	120
2	A. T. James ..	Swanpool ..	76
3	J. Bullingham ..	Tongala ..	157
4	H. E. Keele and Son	Rochester ..	90
5	Mrs. D. H. Jenkins	Woodford ..	87
6	J. H. B. Morris ..	Apollo Bay ..	147
7	B. J. Boardman ..	Yinnar ..	121
8	Les. Mayo ..	Narracan ..	67
9	J. G. Howell ..	Leongatha ..	81
10	M. O. Bunn ..	Korumburra	75 (equal)
	Mrs. A. A. Dennis.	Peninsula	

"Nominal" Butter-fat.

In this section of the competition, age correction factors are introduced in arriving at the "nominal butter-fat" production per £100 of farm value. The yields of junior two-year-olds are multiplied by 1.4, of senior two-year-olds by 1.3, and of three-year-olds by 1.2. These yields and allowances are then added to the yields of the mature cows and the aggregate total of butter-fat is termed "nominal butter-fat." The "nominal butter-fat" is worked out proportionally to the "farm value," one point being allowed for each 10 lb. of "nominal butter-fat" (or butter-fat with heifer allowances). The maximum number of points allowed is 50. These are allotted when the yield averages 500 lb. butter-fat or more, for every £100 of farm value.

Eleven farms were found to have a score of 30 points or less, which indicated less than 300 lb. "nominal butter-fat" to each £100 of farm value. Four farms had lower than 240 lb. By comparison, Mr. L. T. Jones, of Dumbalk North Association, produced 860 lb. "nominal butter-fat" for each £100 of farm value. Nearly twice as many cows are milked on this farm as formerly, while the butter-fat yield per cow has been nearly doubled. Thirty-five farms reached or exceeded the average yield of 500 lb. Several competitors on the low-valued land, by the aid of pasture fertilizing, rotational grazing, and the sub-division of their farms, are making remarkable progress, frequently exceeding 600 lb. of "nominal butter-fat" for each £100 of farm value.

Herd Development and Replacement.

In past competitions, some difficulty was experienced in finding a satisfactory basis by which to appreciate the herd's improved yield, but it is considered that a sound foundation has now been designed. Previously, the junior cow's yield (with allowances) was compared with the average yield of the mature section of the herd and points allotted when an increase occurred. It will be seen that it was difficult to score points when the "old cows" were high-yielders, and easier when they were low-yielders. As the

majority of "tested" herds have a heavily culled, high-producing section of mature cows, and a junior section that contains the undeveloped "hopes" of the future, it was decided to allot points for each section separately. In each section, five points are allotted for a 200-lb. minimum yield and one point for each 20-lb. increase in the yield of butter-fat, the combined score being the points gained for herd development.

For the purposes of illustration, Mr. R. G. Anderson's "top herd" of the 1936 Grade Herd Test is shown in the annual report thus :—

Fourteen mature cows, average 501 lb. butter-fat	= 5 + 15	Total score 40
Ten junior cows (with allowances), average 511 lb. butter-fat ..	= 5 + 15	

The score gained is 40 points, which is the maximum score allowed. Mr. J. D. Pierce's splendid herd also scored the maximum points, while the herds of Messrs. H. E. Keele and Son and J. Bullingham each scored 37 points. Messrs. P. Freestone, T. E. Bond, N. S. Terrier, J. G. Howell, J. B. Watson, and Mrs. Hardie, all had excellent scores that exceeded 30 points. Splendid figures were shown also by Messrs. F. Johnson, J. Beattie, A. T. James, L. T. Jones, E. W. Langford, W. L. Watson's Friesian grade herd, G. Billingham's Red Poll grade herd, F. Unthank and Son, and J. R. Manson and Son's No. 7 herd.

The replacement of worn out cows is being provided for everywhere by the rearing of carefully selected heifers. The judge in Zone 7 suggests that more heifers could be reared with advantage, so that surplus stock might be available for non-testing farmers and beginners.

Breed and Dairy Quality.

Although the judges are primarily concerned with production-bred stock, they seek to appreciate good constitutioned cows and evenness of conformation, capacious middles, and well developed and well attached udders. In other words, they seek evidence of sound breeding methods in the herds inspected. Thirty points is the maximum score in this section and 21 of the contestants scored 28 or 29 of this total. Messrs. H. E. Keele and Son of Zone 4, Mrs. J. M. Scott of Zone 6, G. Bright and L. T. Jones of Zone 9, and Wm. Henderson's Ayrshires of Zone 5, were all considered equal to a 29 score, while Messrs. A. E. Barton of Zone 1, J. D. Pierce and R. Anderson of Zone 4, P. Freestone, J. Bullingham, and J. B. Watson of Zone 3, H. W. Lester of Zone 2, F. Johnson of Zone 6, Mrs. D. Jenkins, W. L. Watson, and E. and J. Harney of Zone 5, D. Spencer and G. J. Howell of Zone 9, Mrs. A. V. Hardie of Zone 8, were highly commended also.

Twelve of the entrants scored the full ten points for the control of their herd sires. This score indicates that the bull has permanent shelter, water, and feeding arrangements, in addition to control at service time. Mr. H. Haywood, of Casterton, had an unusually fine entry in this section.

Lucerne and meadow hay are the main fodder reserves on irrigation farms.

Portion of Messrs. H. Keele and Son's herd of grade Jerseys.

Pigs and Poultry.

In the pig and poultry sections a great improvement can be reported. This portion of the farm varies greatly from one district to another. Except on a few farms, poultry are kept only for the use of the home. They are usually confined to their own pens or kept distinct from the dairy environments. The Australorp fowl appears to have captured the imagination of the majority of the competing farmers, with the White Leghorn in second place. The value of the former for the table, and the ease with which it is controlled, appear to outweigh the extra eggs laid by the average Leghorn. Messrs. F. Unthank and Son of Mornington make the poultry section an important one, the annual return being approximately £3 per week.

In the pig section, it may be considered good work when the gross revenue is approximately 20 per cent. of the dairy returns. This figure is attained on quite a number of competing farms. Five points are provided for a registered boar and ten for the quality of his stock, 25 points for the herd, and ten points for housing and control. Mr. A. J. MacDonald's splendid stock and sheds were awarded the full points. The judge stated that it was the best pig section that he had ever inspected. Messrs. H. Parish of Winchelsea, D. Spencer of Leongatha, J. A. Ford of Kiewa, and J. R. Manson, No. 1, all scored 48 points, while Messrs. G. Bright's Tamworth stud, J. R. Manson's No. 7 farm, and L. T. Jones were all highly commended.

Carrying Capacity and Farm Management.

Six competitors, only, used less than a bag of fertilizer to each dairy cow, while others used more. Mr. J. Bullingham has used 4 cwt. of superphosphate per acre for the past five years, while Mr. W. R. Anderson, of Rochester, has used two bags per acre on some of his paddocks. Approximately 640 tons of superphosphate were used during 1936 on the dairying areas of the competing farms. All of the judges refer to the splendid pastures, red clover, and lucerne stands inspected. Mr. J. Bullingham of Tongala received the full 100 points for his remarkable growth of lucerne, clovers, and grasses. He offers the opinion that more soil fertility is a greater need than more farm area. He had spread approximately a ton of superphosphate per acre during the past five years. It may interest some folk to be assured that there are no signs of acidity or any other trouble on this farm, but there is an extraordinary growth of feed, which enabled Mr. Bullingham to secure a return of £22 per cow from the local factory without the aid of any form of concentrates. The gross return from this farm during 1936 exceeded £14 an acre—the second highest in the

Mr. H. W. Lester's 130 ton combined stack and pit silage reserve. Note that a horse is used to trample the material

The Four Leading Competitors in each Zone.

Zone 1.

Name of Competitor.	Association.	Score.
R. McG. Jamieson ..	Kiewa Valley ..	868
J. A. Ford	Kiewa Valley ..	865
A. E. Barton	Kiewa Valley ..	864
S. J. Edwards ..	Kiewa Valley ..	855
		3,452

Zone 2.

Name of Competitor.	Association.	Score.
Dr. J. L. Henderson ..	Milawa ..	844
A. T. James	Swanpool ..	830
A. J. MacDonald ..	Moyhu ..	783
H. W. Lester	Swanpool ..	776
		3,233

Zone 3.

Name of Competitor.	Association.	Score.
P. Freestone	North Murchison	946
J. Bullingham	Tongala ..	929
J. B. Watson	North Shepparton	840
J. W. Reid	North Murchison	805
		3,520

Zone 4.

Name of Competitor.	Association.	Score.
T. E. E. Bond ..	Cohuna ..	936
H. E. Keele and Son ..	Rochester ..	904
J. D. Pierce	Rochester ..	884
R. G. Anderson ..	Rochester ..	863
		3,587

Zone 5.

Name of Competitor.	Association.	Score.
H. Haywood	Casterton ..	844
Mrs. D. H. Jenkins ..	Woodford ..	832
W. A. Henderson (jnr.)..	Woodford ..	777
W. L. Watson ..	Warrnambool ..	775
		3,228

Zone 6.

Name of Competitor.	Association.	Score.
H. S. Terrier	Winchelsea ..	874
H. Parish	Winchelsea ..	816
F. Johnson	Winchelsea ..	814
J. H. B. Morris ..	Apollo Bay ..	812
		3,316

Zone 7.

Name of Competitor.	Association.	Score.
B. J. Boardman ..	Yinnar ..	856
S. A. Ross	Sale	832
W. F. Treasure ..	Sale	794
E. W. Langford ..	Sale	774
		3,256

Zone 8.

Name of Competitor.	Association.	Score.
L. Senini	Narracan ..	859
Mrs. A. V. Hardie ..	Warragul ..	753
Chas. Dineen	Narracan ..	708
L. Mayo	Narracan ..	579
		2,899

Zone 9.

Name of Competitor.	Association.	Score.
L. T. Jones	Dumbalk North..	926
G. Bright	Dumbalk ..	847
D. Spencer	Leongatha ..	791
J. Beattie	Dumbalk ..	788
		3,352

Zone 10.

Name of Competitor.	Association.	Score.
M. O. Bunn	Korumburra ..	782
J. A. J. Wadelton ..	Peninsula ..	780
F. Unthank and Son ..	Peninsula ..	771
Mrs. A. A. Dennis ..	Peninsula ..	768
		3,101

Seed Certification

Conditions of Scheme

By J. E. Harrison, B.Agr.Sc., Agrostological Research Officer

A general view of single plant plots of perennial rye-grass in the Burnley Plant research field. Each plot represents a field submitted for approval.

INTENSIVE research in various countries has shown that each principal pasture species is made up of separate groups of plants which are called strains. In Victoria, we have found distinct and desirable strains of perennial rye-grass, cocksfoot, Phalaris tuberosa, subterranean clover and white clover, which are now the subject of certification by the Department of Agriculture, or will become so in future years.

These local strains may be regarded as natural selections of climate and soil. The fact of their continuous existence is evidence of their suitability to the districts in which they occur and the satisfactory results which are obtained when their seeds are sown down in other areas is proof of their wider adaptation in Australia itself.

Natural selection has taken place in many cases over a period of 50 years or more. It is not known what original strains of perennial rye-grass and cocksfoot were sown in the early days of settlement, but seed would necessarily be imported from abroad and the dominant strains would be very different from those persisting in our old pastures today. The natural factors of climate and soil, and the influence of the grazing animal, would lead quickly to the death of unsuited plants and to the selection of those which were most fitted to survive. These plants would propagate themselves by seeding and upon the progeny would fall the same selective actions to which the parents had been subject. With this constant elimination of the unfit and selection of the fittest taking place over a period of many years, the present population has become one which shows high adaptation to our climate and soils, and one whose progeny, arising from seed, is true to type in all main respects. It is the seeds of these strains which are, or will become, the subject of certification by the Department of Agriculture.

Certification Schemes.

Under the *Seeds Act* 1935, the Minister for Agriculture is empowered to prepare certification schemes for the purpose of testing and certifying the strain of any kind of seeds, and at the same time, the Act makes certain provisions for the protection of certified seeds in trade. It is probably unique that seed certification should be provided for by statute, and sufficiently controlled by it to encourage fair dealing in trade in certified seeds.

Persons interested in the law relating to certified seeds, should consult the *Seeds Act* 1935 (6d. per copy), and the regulations thereunder (3d. per copy) obtainable from the Government Printer, Public Offices, Melbourne, C.2.

Strain certification is of interest to seed growers, merchants, and farmer purchasers, respectively. Its objects are to identify the strain of a species which the seed grower proposes to harvest; to preserve the seed intact, in sealed parcels, in the ordinary channels of trade; and to place identifiable seeds of reliable strains at the disposal of farmer purchasers.

Seed Growers.

Seed growers will be required to follow certain procedure when they desire to submit seeds for certification as to strain by the Department of Agriculture. It will be necessary for them to make application to the Director of Agriculture each year, by a date to be fixed by him, and which will usually be the 30th November. A form on which to apply is obtainable from the department and a fee of £1 1s. is payable on application.

When application has been made, a qualified officer will visit the seed grower and examine the plants in the fields from which it is proposed to harvest seed. If it is the first time the fields have been examined, the officer may collect seed or plants from each field for growing in a trial plot in a departmental experiment field, and the results obtained will form the main basis for a decision in respect of the field. If the results are satisfactory, the field may be approved by the department and registered accordingly. As plot trials take time to carry out, it will usually happen that a field (if suitable) will be approved twelve months after application has been made. Approval will then remain in force for twelve months. The fee will become payable in all subsequent years whenever the farmer applies to have a seed crop again certified as to strain.

Though approval will primarily be based on examination of the plants in a field and on results of a trial plot established from seed collected from the field, it will also depend upon the area being suitable in all other respects for the production of seed. Once approval is granted, seed may be certified by the department provided that harvesting, threshing, and cleaning have been supervised by an officer who must be satisfied that the seed is solely the product of an approved area. It is necessary that threshing and cleaning should be done at a place approved by the officer and that certain fees be paid at the time the bags of seed are tagged and sealed.

If the seed is not clean or ready for sale, the bags will be given special seals and tags. This is known as "paddock sealing." The seed is

A consignment of "paddock sealed" seed being checked in before re-cleaning operations commence.

G. & N. are Australia's Largest Suppliers of GOVT. CERTIFIED SEEDS

Certified Seeds, like Pedigree Stock, yield more!

"THE STRAIN THAT PAYS"

When you think of Permanent Pastures, think of Government Certified Seeds. G. & N. steps ahead again with varieties, values, and stocks that defy comparison. You can rely on the seeds being genuine, officially guaranteed, and long-lived—the kind that ensures leafy development, quick winter growth, and clean land. Look for the Certificate when buying!

1937 SEED GUIDE
Now Ready!

No sower of pastures should begin operations till he's read it! Compiled to help the farmer get full value from his work.

Hundreds of illustrations; 72 pages; a collection of refreshing ideas and items.

Articles by Govt. Writers.

Many new features. Positively indispensable. Limited number available, so write to-day for your copy.

THE ONLY SEED POSSESSING A GUARANTEE AS TO TRUENESS TO TYPE

Hawke's Bay Certified Perennial Rye Grass "Mother Seed" and "Permanent Pasture" Seed.

Clunes Certified Rye Grass "Permanent Pasture" Seed.

Colac Certified Rye Grass.

Kyneton Certified Rye Grass.

N.Z. White Clover.
"Tallarook" Sub. Clover.

"Dwalganup" Sub. Clover W.A. Certified. (Extra Early.)

Cocksfoot N.Z. "Akaroa" and N.Z. "Mother Seed."

Phalaris, Tuberosa N.S.W. Govt. Certified.

Phalaris, Tuberosa S.A. Govt. Certified.

WE PAY FREIGHT
FOR CASH
ALL VICTORIAN ORDERS
OVER £2

REDUCED PRICES!
Profit by attractive Autumn offers. Big reductions given for larger lots. State approx. needs when writing.

FREE! Obtain Seed samples. Test and compare!

GIPPSLAND & NORTHERN CO.-OP. CO. LTD.

Seed Dept.: 492-4 Flinders Lane, Melbourne, C.1

Telephone: Central 9140 (10 lines). Telegrams: "Gippsnorth" Seed Dept., Melbourne

The New DUNLOP 90 GIANT TRUCK TYRE

—the greatest achievement in the history of commercial vehicle tyre manufacture

Now manufactured for the first time in Australia—the Dunlop Giant "90" truck tyre—famous and proved the world over.

It OFFERS and ENSURES

- UNPRECEDENTED MILEAGE.
- GREATER SAFETY UNDER ALL ROAD CONDITIONS.
- A PROVED NON-SKID TREAD.
- LOWER MAINTENANCE COSTS.

FACTS ABOUT THE DUNLOP "90"

The deeper tread of "tough compound" rubber gives at least 15% more mileage. The "flat," full-width road-contact of its five-rib pattern gives unequalled grip—and protection from both side and forward skids. Remarkable casing life is given by Weftless Cord and the "Disc Doubling" processing of every cord—both exclusive to Dunlop interests in Australia.

Weftless Cord eliminates the destructive heat which saps the life of ordinary truck tyre casings. Disc Doubling, by giving more "twist" to the cord during manufacture, provides greater stretching power—allowing the Dunlop "90" casing to flex under the heaviest load without injury or "fatigue."

HAVE NO TRUCK WITH INFERIOR TYRES . . . FIT DUNLOP "90".

Dunlop Perdriau Rubber Co. Ltd.
Branches all States

Re-cleaned seed being tagged and sealed by an officer of the Department of Agriculture. It is then ready for sale as certified seed.

not certified and may not be sold as certified seed. It may be sold to merchants for recleaning, or it may be recleaned by the farmer himself. In either case, recleaning must be done under the supervision of an officer, who will affix final tags and seals to the clean seed and certify it. If the seed is "paddock sealed," one-half of the certification fee is payable then and one-half is payable when the cleaned seed is finally sealed and certified.

Approved fields of outstanding merit may have the seed harvested from them certified by the department as "mother strain." A field must be at least five years old, and the strain must possess superior qualities in respect of stability of type, before the seed may be so certified. The number of fields likely to enter this class will normally not be very large.

Seed certification operates smoothly and without disturbance to the common routine of seed harvesting. The work has been given a mutually co-operative basis by both seed growers and the Department of Agriculture this season, and has proceeded quietly and efficiently.

Seed Merchants.

When seed has been "paddock-sealed," a merchant may reclean it ready for sale. If he should wish to do this and have it certified at the same time, he must advise the department and arrange for an officer to be present. The bags of "paddock-sealed" seed should not be opened or the seals broken in any way, except in the presence of an officer.

When, in the presence of an officer, the seals are broken and the seed is recleaned at an approved place, the officer may certify the clean seed. The balance of the certification fee (half of the total fee) which was unpaid at the time of "paddock-sealing" then becomes payable.

All seeds certified under Victorian Seed Certification Schemes are saleable as "certified seeds," but the vendor is responsible for the seeds conforming to the minimum standards of purity and germination required by the Seeds Acts for each kind of seed. A vendor may sell these seeds as "certified" only when such seeds are contained in a parcel sealed by the department.

A field of certified perennial rye-grass in the Kyneton district.

An exception to this rule is made when a parcel weighs less than the smallest parcel which the department is required by regulation to seal for each kind of seed, viz.—

Victorian perennial rye-grass ..	60 lb.
Victorian Phalaris tuberosa ..	10 lb.
Tallarook subterranean clover ..	14 lb.
Irrigation white clover ..	5 lb.

Where practicable and convenient, the department will seal and certify smaller parcels than the above statutory sizes, upon request.

Vendors of certified seeds should note particularly, sections 6 and 7 of the *Seeds Act* 1935. Briefly, these sections relate to the use of the words "certified," "certificated," "disease resistant," "disease immune," &c., in any invoice, agreement, circular, or advertisement, or any parcel of seed or attached label. The use of such words constitutes a warranty by the vendor that such seeds have been certified or declared resistant or immune, as provided under the Act.

Farmers.

The certificate of the department relates to *strain* only. It is borne on a tag, which is threaded on the sewing twine used to sew the mouth of the bag of seed. Both ends of the sewing twine are sealed (except in the case of small bags) so that the bag may not be opened without cutting the twine or removing the seals. A parcel is "sealed" only while it is unopened and the seal and certificate remain intact. The seals, of tin or lead, are circular and bear the words "Department of Agriculture, Victoria."

Form C.

Seeds Act 1935.

Department of Agriculture, Victoria.

Certified Strain of VICTORIAN PERENNIAL RYE GRASS.

I CERTIFY (1) that the seed contained in this parcel is of the Victorian Perennial Strain of Rye Grass, and was grown on an approved area numbered ..... situate at .... and (2) that such parcel was sealed by me in accordance with the regulations made under the *Seeds Act* 1935.

Date .....

Officer of the Department of Agriculture.

A.1221/1.37.—54. [P.T.O.

The form of tag which is attached to bags of certified seeds.

Certification gives Warranty as to Strain Only.

On quotation of Number C.S. ..... any person may, on application to the Director of Agriculture, Melbourne, secure information relating to the Purity and Germination of the seed contained in this parcel.

P.T.O.

The reverse side of the tag shown on the previous page.

In addition to the certificate on the tag, another one is put on a slip of paper inside the bag before it is sewn. It is exactly the same as that on the tag and is used as a check in handling seeds during certification, helping to avoid mistakes.

All necessary information about the seed is given or obtainable from the department; it is certified as to strain and particulars of its purity and germination are obtainable upon application.

Certified seeds are sealed by the department in parcels of various sizes, but not of smaller sizes than the following:—

Victorian perennial rye-grass ..	60 lb.
Victorian Phalaris tuberosa ..	10 lb.
Tallarook subterranean clover ..	14 lb.
Irrigation white clover ..	5 lb.

Farmers are thus afforded considerable protection in the purchase of certified seeds, true to strain. They may be sure of obtaining these minimum amounts in sealed parcels, with the certificate intact, and smaller amounts only need be bought in broken packages.

Only desirable strains will be certified by the department and the presence of a departmental certificate on a sealed parcel of seed may be taken as its recommendation of that strain for suitable conditions. The certificate will be printed in either red or blue. If it is printed in blue, it will state that the seed is "mother strain," which will mean that it is the produce of a highly stable pasture, five years old or more. Seed of "mother strain" is specially recommended for the establishment of seed crops which the grower may desire to have certified by the department. When seed of "mother strain" is bought for this purpose, the departmental certificate should be preserved and produced when application is made for approval of the field. Seeds of both "mother strain" and the ordinary certified strain are recommended for the establishment of permanent pasture.

Cocksfoot strain trials—single plant plots.

The Amalgamated Freezing Co's. works at Ballarat. Blood and bone fertilizer and meat meal are by-products of these works.

Artificial Fertiliser Inspections

Report for 1936

By W. C. Robertson, Chemist.

DURING the 1936 season, 47 samples of the various artificial fertilizers were collected throughout the State, under the provisions of the Fertilizers Act, by the inspecting officers of the Department of Agriculture. Approximately one sample in every fifteen collected, or 6.5 per cent. were found, on analysis, to be adulterated to such an extent that they exceeded the limits of plant food deficiency allowed by the Act. In each instance a prosecution ensued and the offender was penalized. The infringements were all serious and occurred in the animal fertilizer section, which includes brands of blood and bone, but not of bonedust.

The particulars in connexion with the samples at fault, shown in Table I., will serve to show the necessity for the Fertilizer Act, and the value of the inspections under its provisions. The values per ton of each of the brands which infringed the Act were as follow :—

—	Price per Ton.		Registered Price.
	As Guaranteed.	As Found.	
	£ s. d.	£ s. d.	£ s. d.
Blood and bone ..	8 14 10	6 4 8	8 10 0
Animal fertilizer ..	7 1 0	6 2 3	7 10 0
Bone fertilizer ..	7 12 5	5 15 0	8 0 0

From the analyses and the calculated values per ton of these samples it will be seen that they were of most inferior quality. In one case the deficiency in plant food when converted into £. s. d. amounted to two pounds ten shillings per ton. However, it is satisfactory to be able to say that samples of this description are exceptions and probably, were the result of a shortage in

TABLE I.—ANALYSES OF THE THREE FERTILIZERS WHICH INFRINGED THE ACT DURING 1936.

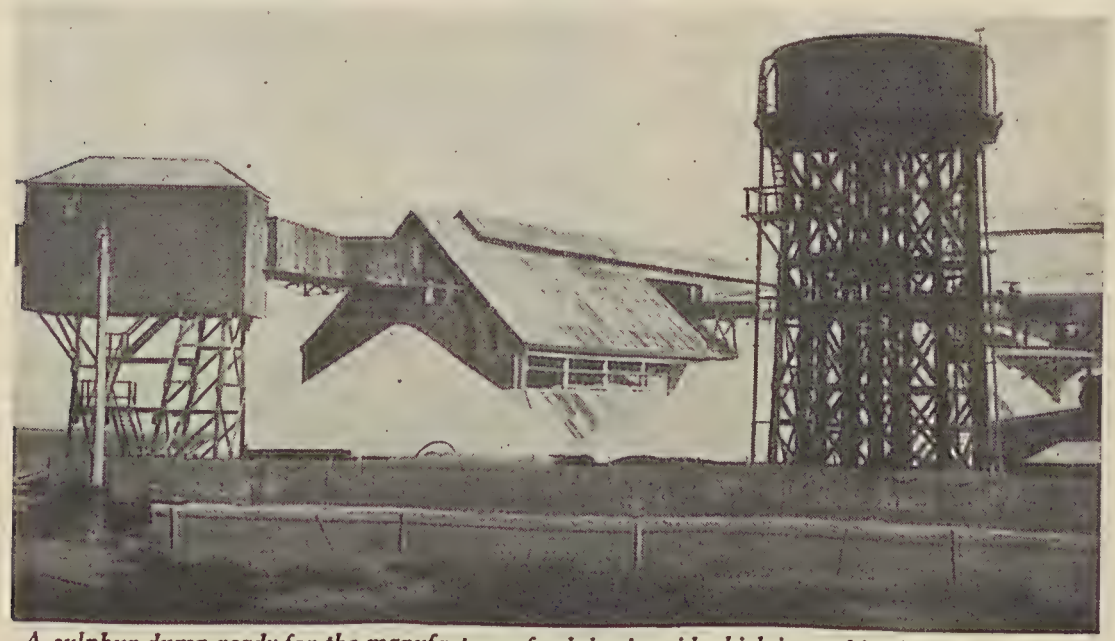
Sample.	Fertilizing Ingredients.	Analysis Guaranteed.	Analysis as Found.	Deficiency Allowed.	Deficiency.
		Per cent.	Per cent.	Per cent.	Per cent.
Blood and bone fertilizer ..	Nitrogen	8·00	5·78	5	**27·75**
	Phosphoric Acid—				
	Citrate Soluble	3·00	3·37	..	..
	Citrate Insoluble	5·00	1·75	7	**65·00**
Animal Fertilizer ..	Nitrogen	5·00	3·90	5	**22·00**
	Phosphoric Acid—				
	Citrate Soluble	4·00	3·43	..	..
	Citrate Insoluble	10·00	10·67	..	..
Bone Fertilizer	Nitrogen	(4.25)*	2·63	5	**38·10†**
	Phosphoric Acid—				
	Citrate Soluble	(8·25)*	6·22	7	**24·60†**
	Citrate Insoluble	(8·50)*	12·14	..	..

* Brand not registered ; figures in brackets represent previous registration.
† Calculated on figures of previous registration.

raw material brought about by (*a*) the increased consumption of bone-meal as a stock lick and food, and (*b*) the export of certain lines associated with this particular branch of the fertilizer industry.

Two of the brands under discussion were the produce of small country mills whose combined output for the year would not exceed 400 tons. The other brand of fertilizer is manufactured in the metropolis and represents one of the largest mills in the animal fertilizer trade with an estimated output of at least 2,000 tons per annum.

In one case of adulteration, proceedings against a distributor were avoided by an inspection at



A sulphur dump ready for the manufacture of sulphuric acid which is used in the preparation of superphosphate.

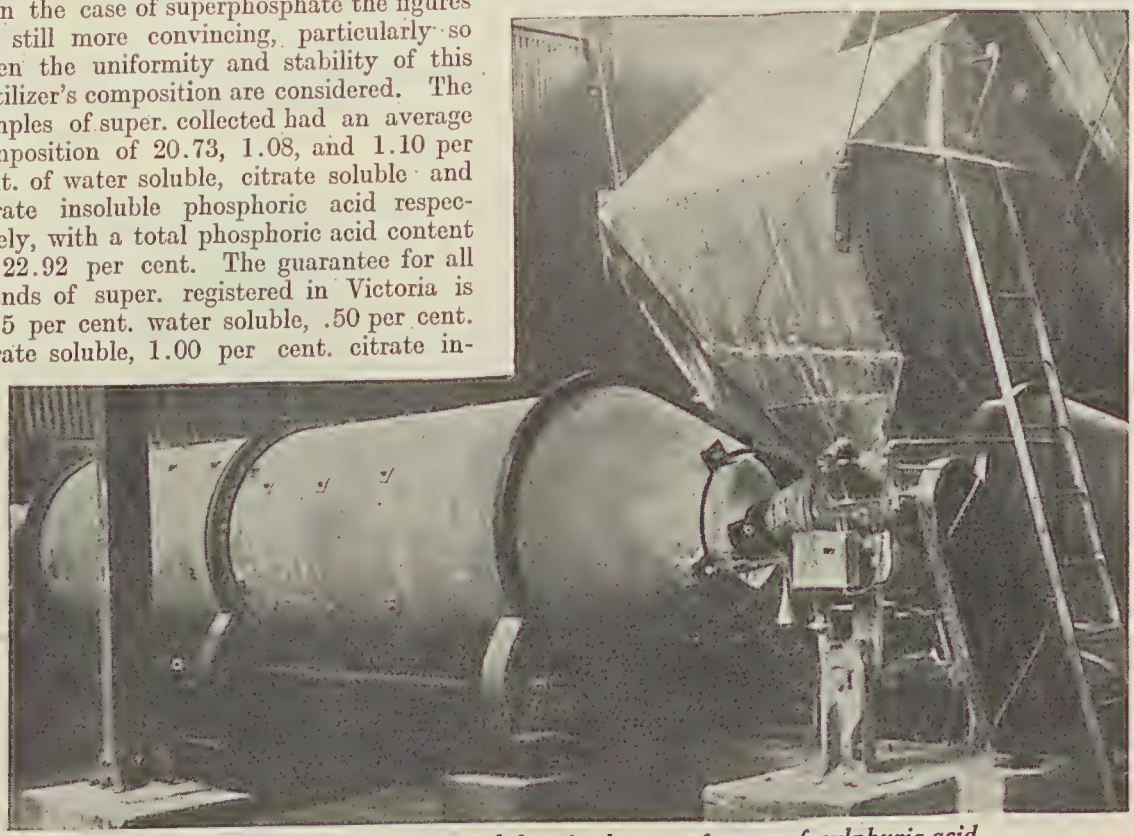
the works of the manufacturer, who later was prosecuted. While this system is practised wherever possible, instances may happen where it would be necessary to take proceedings against the person in possession. It is therefore advisable for all dealers to protect themselves.

Of the 47 samples of fertilizers collected during the past season, twelve (25.5 per cent.) represented animal fertilizer or blood and bone; while six, or 12.75 per cent. consisted of superphosphate. The average guarantee of the samples of blood and bone collected was 5.14 per cent. of nitrogen, 5.55 per cent. of citrate soluble phosphoric acid, and 10.05 per cent. of citrate insoluble phosphoric acid, whereas figures for the average composition as found on analysis were 5.35 per cent., 5.85 per cent., and 10.44 per cent. respectively. The average value per ton calculated from the label guarantee was £7 13s. 5d., while the average value found was £7 19s. 9d., or six shillings and fourpence per ton in favour of the farmer. Assuming that 10,000 tons of this class of fertilizer were sold annually to the Victorian farmer the excess value would amount to approximately £3,500. (In these calculations the analytical figures of the adulterated samples were omitted).

In the case of superphosphate the figures are still more convincing, particularly so when the uniformity and stability of this fertilizer's composition are considered. The samples of super. collected had an average composition of 20.73, 1.08, and 1.10 per cent. of water soluble, citrate soluble and citrate insoluble phosphoric acid respectively, with a total phosphoric acid content of 22.92 per cent. The guarantee for all brands of super. registered in Victoria is 20.5 per cent. water soluble, .50 per cent. citrate soluble, 1.00 per cent. citrate insoluble and 22.00 per cent. total phosphoric acid. Calculating from these figures by the unit value system the guaranteed value was £3 13s. per ton, whereas the apparent value supplied was £3 14s. 10d. per ton.

More than 300,000 tons of superphosphate were used by the man on the land in Victoria during 1936, and it is estimated that the plant food (phosphoric acid) supplied as super. in excess of that guaranteed had a value of £27,500. It is particularly gratifying to record the exceptional quality of the superphosphate manufactured in the State, more especially when it is remembered that at least 85 per cent. of the annual artificial fertilizer output consists of superphosphate, that it is used on approximately 97.5 per cent. of the wheat lands, and that the pasture lands now top-dressed with super. far exceed two million acres.

Apart from blood and bone and superphosphate the fertilizers represented by the samples collected, the analyses of which are shown on page 127, are as follows:—Bone fertilizer, super. and ammonia, blood manure, ammonium sulphate, potassium sulphate, sodium nitrate, nitro-chalk, castor meal nitro super. blood, bone and super., bone and



A rotary burner for burning sulphur in the manufacture of sulphuric acid.

RESULTS OF ANALYSIS OF SAMPLES OF ARTIFICIAL FERTILIZERS COLLECTED IN VICTORIA DURING THE 1936 SEASON UNDER THE PROVISIONS OF THE FERTILIZERS ACT 1928, No. 3680.

Bottle Label No.	District in which Sample was Obtained.	Brand and Description of Fertilizer.	Analysis as Guaranteed by Manufacturer or Found by Chemist.	Nitrogen.				Phosphoric Acid.				Potash as Sulphate.	Mechanical Condition of Bonedusts.		Manufacturer or Importer.
				As Ammonia.	As Bone.	As Blood and Bone.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.		Fine Material.	Coarse Material.	
				%	%	%	%	%	%	%	%	%	%	%	
1832	Metropolitan	Sickle Nitrate of Soda	Guaranteed	15·50* as nitrate	..	..	15·50 as nitrate	..	..	..	..	..	..	..	Commonwealth Fertilizers and Chemicals Ltd., 65 William-street, Melbourne
			Found ..	16·15 as nitrate	..	..	16·15 as nitrate	..	..	..	..	..	..	..	
1833	,,	T. B. and S. Brooklyn Dried Blood	Guaranteed	..	11·60 as blood	..	11·60 as blood	..	..	..	..	..	..	..	Thomas Borthwick and Sons (Australasia) Ltd., 84 William-street, Melbourne
			Found ..	..	12·30 blood	..	12·30 blood	..	..	..	..	..	..	..	
1834	,,	Sickle Sulphate of Potash	Guaranteed	..	..	..	..	..	..	..	..	48·50	..	..	Commonwealth Fertilizers and Chemical. Ltd., 65 William-street, Melbourne
			Found ..	..	..	..	..	..	..	..	..	48·65	..	..	
1835	,,	Sickle Market Garden Manure	Guaranteed	1·70	..	1·30	3·20	10·30	2·40	4·20	16·90	2·42	..	..	,, ,, ,,
			Found ..	2·10	..	1·43	3·53	11·59	1·67	4·84	18·10	3·64	..	..	
1851	Dandenong	Apollo Blood and Bone	Guaranteed	..	..	5·00	5·00	..	4·00	12·00	16·00	..	..	..	J. Kitchen and Sons Pty. Ltd., Ingle-street, Port Melbourne
			Found ..	..	..	4·90	4·90	..	4·86	12·66	17·52	..	..	..	
1852	,,	Alba Castor Meal	Guaranteed	..	..	..	4·50 as castor meal	..	..	2·25	2·25	·75	..	..	Lycett Pty. Ltd., Normanby-road, Montague
			Found ..	..	..	..	4·84 as castor meal	..	..	2·25	2·56	1·30	..	..	
1853	,,	SickleBlood and Bone	Guaranteed	..	..	5·00	5·00	..	6·00	10·00	16·00	..	..	..	Commonwealth Fertilizers and Chemicals Ltd., 65 William-street, Melbourne
			Found ..	..	..	4·88	4·88	..	5·14	13·61	18·75	..	..	..	
1854	,,	Sickle Nitro-Super	Guaranteed	1·50	..	·50	2·00	16·70	1·10	2·00	19·80	..	..	..	,, ,, ,,
			Found ..	1·48	..	·70	2·18	17·33	·94	2·73	21·00	..	..	..	
1855	,,	Sickle Super and Bone No. 2	Guaranteed	..	..	1·00	1·00	16·00	1·80	3·10	20·90	..	..	..	,, ,, ,,
			Found ..	..	..	·97	·97	16·37	1·20	4·03	22·20	..	..	..	
1856	Cheltenham	Pridham's Blood and Bone	Guaranteed	..	..	5·40	5·40	..	8·50	5·50	14·00	..	..	..	W. Pridham Pty. Ltd., Evans-street, Braybrook
			Found ..	..	..	5·18	5·18	..	5·72	8·79	14·51	..	..	..	
1857	,,	Organite Mixed Fertilizer	Guaranteed	1·00	..	4·50 as leather	5·50	3·00	..	..	3·00	..	..	..	Organite Pty. Ltd., 450 Smith-street, Collingwood
			Found ..	1·02	..	4·60 as leather	5·62	3·36	..	..	3·63	..	..	..	
1859		Sickle Nitro-Chalk.	Guaranteed	7·75	7·75 as nitrate	..	15·50	..	..	..	..	..	..	..	Commonwealth Fertilizers and Chemicals Ltd., 65 William-street, Melbourne
			Found ..	7·84	7·42 as nitrate	..	15·26	..	..	..	..	..	..	..	
1863	Numurkah	Murka Blood and Bone	Guaranteed	..	..	5·05	5·05	..	6·45	9·93	16·38	..	..	..	Numurkah By-products Pty. Ltd., Numurkah
			Found ..	..	..	4·78	4·78	..	6·18	10·86	17·04	..	..	..	
1864	Shepparton	Sickle Super and Ammonia (6 + 1)	Guaranteed	2·90	..	..	2·90	17·50	·40	·90	18·80	..	..	..	Commonwealth Fertilizers and Chemicals Ltd., 65 William-street, Melbourne
			Found ..	2·81	..	..	2·81	18·04	*	*	19·85	..	..	..	

* Not estimated.

RESULTS OF ANALYSIS OF SAMPLES OF ARTIFICIAL FERTILIZERS COLLECTED IN VICTORIA DURING THE 1936 SEASON UNDER THE PROVISIONS OF THE FERTILIZERS ACT 1928, No. 3680—*continued.*

Bottle Label No.	District in which Sample was Obtained.	Brand and Description of Fertilizer.	Analysis as Guaranteed by Manufacturer or Found by Chemist.	Nitrogen.				Phosphoric Acid.				Potash as Sulphate.	Mechanical Condition of Bonedusts.		Manufacturer or Importer.
				As Ammonia.	As Bone.	As Blood and Bone.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.		Fine Material.	Coarse Material.	
				%	%	%	%	%	%	%	%	%	%	%	
1865	Shepparton	Sickle Super and Ammonia (2 + 1)	Guaranteed	6·87	..	..	6·87	13·66	·34	·66	14·66	..	..	..	Commonwealth Fertilizers and Chemicals Ltd., 65 William-street, Melbourne
			Found ..	6·57	..	..	6·57	14·13	*	*	15·24	..	..	..	
1866	Mildura ..	Dundas Blood and Bone	Guaranteed	..	..	4·50	4·50	..	7·14	13·61	20·75	..	..	..	J. A Dundas, Dynon-road, Footscray
			Found ..	..	..	5·05	5·05	..	6·69	11·99	18·68	..	..	..	
1867	,, ..	A.N.A. Surprise Animal Fertilizer	Guaranteed	..	..	5·00	5·00	..	4·00	10·00	14·00	..	..	..	G. W. Pennell, Burke-street, Braybrook
			Found ..	..	..	5·23	5·23	..	6·61	9·72	16·33	..	..	..	
1868	Sale ..	Newnham's Bone Fertilizer	Guaranteed	..	2·51	..	2·51	..	2·92	15·38	18·30	..	..	..	Newnham's Pty. Ltd. Gutheridge - road, Sale
			Found ..	..	2·28	..	2·28	..	6·86	16·72	23·58	..	..	..	
1869	Mildura ..	Pivot II. Super and Ammonia	Guaranteed	5·00	..	..	5·00	15·30	·30	·80	16·40	..	..	..	The Phosphate Co-operative Co. of Australia Ltd., 447 Lit. Collins-street, Melbourne
			Found ..	4·87	..	..	4·87	16·20	·40	·51	17·11	..	..	..	
1870	Sale ..	G.B.P. Bonedust	Guaranteed	..	3·44	..	3·44	..	..	..	24·00	..	65·0	35·0	Gippsland Bone Products, Sale
			Found ..	..	3·37	..	3·37	..	..	..	23·94	..	69·5	30·5	
1871	Shepparton	Sickle Sulphate of Ammonia	Guaranteed	20·60	..	..	20·60	..	..	..	..	..	..	..	Commonwealth Fertilizers and Chemicals Ltd., 65 William-street, Melbourne
			Found ..	20·66	..	..	20·66	..	..	..	..	..	..	..	
1872	,,	Cresco 22 per cent. Super.	Guaranteed	..	..	..	..	20·50	·50	1·00	22·00	..	..	..	Cresco Fertilizers, Ltd., Geelong
			Found ..	..	..	..	..	20·51	*	*	22·66	..	..	..	
1874	Mildura ..	Pivot Superphosphate	Guaranteed	..	..	..	..	20·50	·50	1·00	22·00	..	..	..	The Phosphate Co-operative Co. of Australia Ltd., 447 Lit. Collins-street, Melbourne
			Found ..	..	..	..	..	21·37	·86	1·07	23·30	..	..	..	
1875	,, ..	Pivot Superphosphate	Guaranteed	..	..	..	..	20·50	·50	1·00	22·00	..	..	..	,, ,, ,,
			Found ..	..	..	..	..	20·63	·75	1·17	22·55	..	..	..	
1876	,, ..	†Sun Sulphate of Potash	Guaranteed	..	..	..	..	..	..	..	..	50·00	..	..	Redcliffs Co-operative Packing Co. Ltd., Red Cliffs
			Found ..	..	..	..	..	..	..	..	..	49·83	..	..	
1877	,, ..	A.N.A. Surprise Animal Fertilizer	Guaranteed	..	..	5·00	5·00	..	4·00	10·00	14·00	..	..	..	G. W. Pennell, Burke-street, Braybrook
			Found ..	..	..	4·21	4·21	..	6·42	9·45	15·87	..	..	..	
1879	,, ..	Cresco Super. and Ammonia (2 + 1)	Guaranteed	6·87	..	..	6·87	13·66	·34	·66	14·66	..	..	..	Cresco Fertilizers Ltd., Geelong
			Found ..	7·37	..	..	7·37	13·53	·32	·56	14·41	..	..	..	
1880	,, ..	Pivot Superphosphate	Guaranteed	..	..	..	..	20·50	·50	1·00	22·00	..	..	..	The Phosphate Co. operative Co. of Australia Ltd., 447 Lit. Collins-street, Melbourne
			Found ..	..	..	..	..	20·26	1·50	1·14	22·90	..	..	..	
1881	,, ..	Pannifex No. 4 Animal Fertilizer	Guaranteed	..	..	6·00	6·00	..	5·00	7·00	12·00	..	..	..	H. C. Pannifex and Co. Pty. Ltd., 4 Dudley-street, Melbourne
			Found ..	..	..	7·22	7·22	..	5·51	4·90	10·41	..	..	..	
1882	,, ..	Imperial Blood and Bone	Guaranteed	..	..	5·00	5·00	..	5·00	11·00	16·00	..	..	..	W. Angliss and Co. (Aust.) Pty. Ltd., 42 Bourke-street, Melbourne
			Found ..	..	..	5·86	5·86	..	6·11	9·13	15·24	..	..	..	
1883	,, ..	A.N.A. Surprise Animal Fertilizer	Guaranteed	..	..	5·00	5·00	..	4·00	10·00	14·00	..	..	..	G. W. Pennell, Burke-street, Braybrook
			Found ..	..	..	5·36	5·36	..	6·46	9·56	16·02	..	..	..	
1884	,, ..	Sickle Super. and Ammonia (3 + 1)	Guaranteed	5·00	..	..	5·00	15·40	·30	·80	16·50	..	..	..	Commonwealth Fertilizers and Chemicals Ltd., 65 William-street, Melbourne
			Found ..	4·88	..	..	4·88	15·87	·66	·61	17·14	..	..	..	
1885	,, ..	Sickle 22 per cent. Superphosphate	Guaranteed	..	..	..	..	20·50	·50	1·00	22·00	..	..	..	,, ,, ,,
			Found ..	..	..	..	..	20·98	1·51	1·23	23·72	..	..	..	
1886	,, ..	M.G. Co. Sulphate of Ammonia	Guaranteed	20·59	..	..	20·59	..	..	..	..	..	..	..	The Metropolitan Gas Co., 196 Flinders-street, Melbourne
			Found ..	20·41	..	..	20·41	..	..	..	..	..	..	..	

* Not estimated.

† Imported under section 29 of the *Fertilizers Act* 1928.

RESULTS OF ANALYSIS OF SAMPLES OF ARTIFICIAL FERTILIZERS COLLECTED IN VICTORIA DURING THE 1936 SEASON UNDER THE PROVISIONS OF THE FERTILIZERS ACT 1928, No. 3680.—*continued.*

Bottle Lable No.	District in which Sample was Obtained.	Brand and Description of Fertilizer.	Analysis as Guaranteed by Manufacturer or Found by Chemist.	Nitrogen.				Phosphoric Acid.				Potash as Sulphate.	Mechanical Condition of Bonedusts.		Manufacturer or Importer.
				As Ammonia.	As Bone.	As Blood and Bone.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.		Fine Material.	Coarse Material.	
				%	%	%	%	%	%	%	%	%	%	%	
1887	Mildura ..	Cresco No. 1 Mixed Manure	Guaranteed	1·00	..	1·40	2·40	11·25	2·00	4·50	17·75	5·00	..	..	Cresco Fertilizers Ltd., Geelong
			Found ..	1·06	..	1·64	2·70	11·65	2·20	4·04	17·89	5·19	..	..	
1888	,, ..	Fertillo Blood and Bone	Guaranteed	..	..	6·00	6·00	..	6·00	9·00	15·00	..	..	..	Glues and By-products Pty. Ltd., 86 King-street, Melbourne
			Found ..	..	..	6·79	6·79	..	5·60	10·51	16·11	..	..	..	
1889	,, ..	Pivot Superphosphate	Guaranteed	..	..	..	..	20·50	·50	1·00	22·00	..	..	..	The Phosphate Co-operative Co. of Australia Ltd., 447 Lit. Collins-street, Melbourne
			Found ..	..	..	..	..	20·70	·92	·80	22·42	..	..	..	
1891	Ballarat ..	Elsworth's Bone Fertilizer	Guaranteed	..	4·00	..	4·00	·50	5·80	11·70	18·00	..	..	..	W. R. Elsworth, cr. York and Joseph streets, Ballarat
			Found ..	..	3·58	..	3·58	..	5·47	16·47	21·94	..	..	..	
1892	,, ..	Pannifex No. 8 Animal Fertilizer	Guaranteed	..	..	4·75	4·75	..	6·50	12·50	19·00	..	..	..	H. C. Pannifex and Co. Pty. Ltd., 4 Dudley-street, Melbourne
			Found ..	..	..	4·77	4·77	..	4·91	14·14	19·05	..	..	..	
1895	Dandenong	Sickle Blood Bone and Super.	Guaranteed	..	..	2·50	2·50	12·51	1·43	2·96	16·90	..	..	..	Commonwealth Fertilizers and Chemicals Ltd., 65 William-street, Melbourne
			Found ..	..	..	2·54	2·54	11·80	1·93	5·79	19·52	..	..	..	
1898	,,	Sickle and Bone and Super. No. 1	Guaranteed	..	..	2·00	2·00	11·40	3·00	5·30	19·70	..	..	..	,, ,, ,,
			Found ..	..	..	2·28	2·28	11·83	1·50	7·14	20 47	..	..	..	

super., super. and bone, and complete fertilizers. A reference to the table will show that the analyses proved that the quality of the brands of these fertilizers compared very favourably with the label guarantee.

Artificial fertilizers of the type of sodium nitrate, nitro-chalk and potash salts are imported, and therefore more or less under rigid control. Adulteration could only take place locally, and then at the hands of a small distributor, who would require to run a grave risk for a slight gain.

Sulphate of ammonia, as the analytical figures of the table disclose, is very uniform in composition, irrespective of origin, i.e., whether of local manufacture obtained from the nitrogen of coal in gas works by means of destructive distillation, or the imported synthetic product, obtained from the nitrogen of the air. There is also very little difference in the composition of the acid (green) and neutral (white and granular) types of this concentrated nitrogenous fertilizer.

It would appear that nitrogenous super., represented by blood, bone and super., super and bone, bone fertilizer and super., and nitro-super., is an example of overlapping because of the similarity in composition of the non-ammoniacal brands. Nitrogen as ammonia, under proper conditions of cultivation, becomes available much quicker than nitrogen when in organic combination as blood, as bone, or as blood and bone. Nitro-super. can therefore be considered as a distinct fertilizer supplying nitrogen in readily available form as ammonia with a lesser amount of the element in the organic and moderately available form of bone and blood.

On the other hand the other forms of nitrogenous superphosphate are very similar and it is suggested that three of the brands, blood, bone and super., super. and bone and bone fertilizer and super. could be dispensed with altogether, making bone and super. the only non-ammoniacal nitro-super. on the market. The variation in these brands of mixed fertilizer rests entirely on the percentages of bone dust or bone fertilizer and superphosphate which occur in the mixture.

Assuming the average dressing to be 1 cwt. per acre, the minimum and maximum amounts of blood or bone nitrogen spread over the acre by these fertilizers would be 1 lb. and 2.5 lb. respectively. It is questionable whether these amounts of unavailable nitrogen or the difference between them would have any marked effect on all crops on all types of soil. As far as the phosphoric acid is concerned the amount of plant food in the citrate soluble condition which would be present in a 1 cwt. dressing of the fertilizers ranges between

[*Continued on page* 146.

Ephemeral Fever or "Three Day Sickness" of Cattle

(Prepared by the News Letter Service Committee of the Victorian Veterinary Association in collaboration with the Chief Veterinary Inspector—Mr. R. J. de C. Talbot, B.V.Sc.)

THE following is an account of a well-known tropical disease of cattle which has recently appeared in Northern Australia. As the infection has not previously occurred in Victoria, the authors have very little first-hand knowledge of the disease, but the published experiences of local and overseas investigators have been freely consulted and many additional facts have been collected from observers in other States of Australia.

Cow in characteristic attitude during second stage of disease. Note obvious lameness in left foreleg.

History of the Disease.

The disease appears to have been endemic in Africa for many years; according to Freer (1909) it was described by Schweinfurth, who saw it amongst native cattle in Central Africa between 1860 and 1871. According to Sen (1931) a similar disease appeared in Egypt and was described by Piot-Bey in 1895. In addition, when it reappeared in modern times in Rhodesia in 1906, it was recognized by old natives of Matabeleland and Khama's country as a disease which had visited the district before. On this occasion it was first seen by Edmonds, and was later studied and described by Bevan (1907). From Rhodesia it spread through Transvaal and Natal, and after reaching the eastern province of Cape Colony it died out. Four years later it reappeared in South Africa and the distribution was somewhat similar to that during the earlier epidemic (Bevan 1912). In South Africa it has now become recognized as an endemic disease, occurring particularly during the wet season when conditions are most favourable for the propagation of possible anthropod vectors such as midges, mosquitoes, ticks, &c.

From time to time it has appeared in other countries. In 1919 Merkens described a disease of milch cows in the Dutch East Indies which appears to be identical with Ephemeral Fever. In 1922 Fatamura published an account of a form of bovine "influenza" seen in Japan, which is considered to be identical with the African malady. Although it is recognized that Ephemeral Fever is common in certain parts of India, the first authentic account of the disease was given by Meadows in 1919. In 1931 Sen (India) redescribed the disease and stated that it was common, and had been studied by a number of investigators. In 1930 it was discovered in Palestine by Rosen (1931).

History in Australia.

In Australia Ephemeral Fever was first recognized near Burketown (in the Gulf Country) in May, 1936, although what probably was the same disease had been seen in the Kimberleys (north-western Australia) in March, 1935. It has not been recorded as present in the Northern Territory, although it is not improbable that the disease was first introduced into the Territory and spread west and east into Western Australia and Queensland. In Queensland the disease spread in an easterly direction, reaching the coast a few months later. It then spread north to Townsville, which it reached in October, 1936. It spread slowly in a southerly direction to reach Brisbane about December of the same year. With the advent of the summer rains and accompanying humidity and plague of blood-sucking diptera, the spread

became more rapid and was reported in new localities, reaching New South Wales early in the new year. Towards the end of January, 1937, it was reported in rapid succession from the Tweede–Lismore district, Moree district, and Bourke. A week later it was present in the County Cumberland at Campbelltown, near Sydney. Since then the infection has been discovered in many of the intervening districts.

The probable reason why the infection has not reached the southern portion of Western Australia is that all northern cattle must be carried to Perth by sea and slaughtered as soon as possible after arrival, because of the risk of introducing tick fever, pleuro-pneumonia and buffalo fly. All overland cattle routes from the Kimberleys to the south have been closed for a number of years.

In many instances the appearance of the infection in new localities has not been associated with the introduction of infected cattle. In fact in some cases there has been no record of contact with any strange cattle at all. The infected property in the Lismore district lies within the tick-free area and all introductions of cattle from Queensland have been prohibited for some considerable time. In Moree, the last Queensland cattle to make contact with the infected herd were introduced many months before. In addition, the disease has been observed on several islands 10 miles or more off the Queensland coast, there being no contact with the mainland cattle, although pleasure boats call at regular intervals. It has reached the Darling Downs, which have an altitude of over 2,000 feet, and a climate not unlike Victoria, at least as regards range of temperature. The first case in this State was reported at Wodonga on 13th February last.

The scattered distribution of the disease is one of its main characteristics, and, as it will jump distances up to 100 miles or more, control is extremely difficult.

Etiology and Symptoms.

The causal organism has not been isolated, but it is present in the blood of infected animals during the febrile stage. It is not present in the saliva. The general belief is that it is one of the ultra-visible micro-organisms.

The main symptoms are fever, general depression, fleeting lameness, and congestion of the respiratory and conjunctival mucous membranes. The earliest indications of an attack are loss of appetite and suspension of rumination, a rise of temperature with roughness of the coat, and a watery discharge from the eyes and nose, and drooping ears. During the next few hours the disease develops rapidly, when the temperature may reach 106° F.

Painful lameness may appear in one or more limbs or there may be a general stiffness of the whole of the body. Stiffness of the neck, with difficult or impaired swallowing, is common. The lameness is extremely difficult to locate, owing to its fleeting nature; an animal may pull up lame on one leg, and a short time after move off lame in quite a different limb.

In some animals the muscular weakness and general depression are so great that the beast adopts a recumbent attitude. At this stage the mucous membrane of the mouth is reddened, and the eyelids swollen, giving the eyes a peculiar glaring appearance. During the period of muscular pain the gait is awkward and stilted, and has been likened to that of a horse with laminitis, or a mechanical nursery toy.

The state of the bowels is variable. In some cases the animal suffers from constipation, with mucous-covered faeces, in others there is diarrhoea and possibly tympanites.

Recovery is as rapid and spectacular as the development of the disease. After an interval of 24–48 hours, the temperature drops almost to normal, appetite returns, acute symptoms (including muscular pains) disappear, and the greater percentage of animals are convalescent about the third or fifth day after the symptoms first appeared. In rare cases complications may ensue and the animals remain ill for several weeks.

As the mortality rate is so extremely low, and the duration of the disease so short, it could pass through a herd of beef cattle without being detected. It appears that there is little or no

Showing cow with stiff neck. A second-stage symptom of the disease. Note lameness also.

loss of condition except in those cases where complications occur, although an occasional observer will report that there is considerable loss of condition.

In milch cattle, on the other hand, the disease is extremely serious, as the milk yield falls to zero. As a general rule the yield comes back to normal after convalescence, unless the cow is nearing the end of lactation, when she may "dry up." In draught-oxen or travelling stock, the disease is equally serious, as the affected animals are unable to move any distance for two or more weeks.

Post-mortem Appearances.

Most of the deaths occur as a result of foreign-body pneumonia produced by attempts at medication by drenching during the height of the disease. In cases with no complications which have terminated fatally or are slaughtered, there is very little to see apart from some congestion of the respiratory mucosa, pleural and pericardial effusion, meningeal congestion, and enlarged moist lymphatic glands often marked with small superficial haemorrhages. Cloudy swelling of the skeletal muscles may be seen.

Transmission and Natural Vectors.

The disease is readily transmitted to cattle by intravenous injection of blood taken from animals during the height of the disease. The incubation period is from two to six days, under experimental conditions. The natural mode of infection is unknown, but probably an insect vector is required, as the disease is non-infectious by contact under experimental conditions. If this hypothesis is correct, it would explain why the disease appears in isolated areas without any contact with diseased cattle, since mosquitoes and other small diptera can be carried many miles by strong winds. This theory would explain how the disease crossed the tick-proof fence from Queensland, and also appeared on the islands off the coast. In general, the experience in other tropical countries indicates that the vector is an insect which becomes prevalent during the rainy season (summer) which corresponds with the period of rapid spread of the disease.

Under natural conditions only cattle develop the disease, although Bevan (1907) found that sheep inoculated with virulent blood developed a temperature reaction about the sixth day. All classes of cattle are apparently liable to become infected, including English breeds, and in Africa (indigenous native breeds). Mulhearn (Queensland) has observed it amongst animals showing distinct evidence of the Brahman (Zebu) cross.

There is some evidence both from abroad and Australia to show that adult animals are more susceptible than calves. According to Freer (1909), fat stall-fed beasts show more acute symptoms than animals at pasture. Working bullocks are just as susceptible as other bovines. The duration of an epidemic in an individual herd varies considerably, but is probably about two months.

The morbidity rate is high, but appears to vary from country to country, and year to year. In South Africa it is very seldom that more than 10 to 20 per cent. of the animals in a herd develop the disease, although a morbidity rate as high as 50 per cent. has been observed. In Australia (which must be regarded as virgin ground) up to 80 per cent. of individual herds may become infected.

On the other hand the mortality rate is extremely low. As a general rule all the cases recover, although as many as 2 per cent. of those infected may die. The majority of deaths are the direct result of unsuccessful attempts at medication or forcing the animals to travel before they are fully recovered.

In areas where Red Water (*Piroplasmosis*) is endemic, relapses amongst premunized (salted) animals may occur, in which case the mortality rate would be expected to rise.

Under experimental conditions immunity appears to last only six weeks at the most, and Freer has reported that one animal may suffer two, three or even four attacks in one season.

Diagnosis and Treatment.

According to Henning, when there is a sudden outbreak of lameness or stiffness amongst a number of cattle during or after a spell of hot moist weather, ephemeral fever should be suspected. If there is a very high temperature, and the affected animals recover spontaneously after two or three days, a diagnosis can be made with a fair amount of certainty. A definite diagnosis can be obtained by a blood inoculation.

So far no treatment has been found to be satisfactory. In fact the mortality is lower amongst untreated animals. It is difficult for the owners of the stricken beasts to realize that their moribund animals will return to normal in two or three days, and in consequence, empirics and charlatans ply an extremely lucrative trade in infested areas. Affected cattle should be provided with a liberal supply of cool, fresh water, but not

forced to drink, and if possible protected from the sun. But the less they are interfered with the more favourable are the results. From this fact the disease has earned (in South Africa) the title of "the lazy man's disease."

In Victoria the disease has been listed under the Stock Diseases Act as a Notifiable Disease, and it is compulsory to notify the Chief Veterinary Inspector of the Department of Agriculture if the disease appears in a herd.

Butter Production and Export

The following table shows:—

(*a*) Factory production of butter and cheese in Victoria for the period July to December, 1936, compared with the corresponding period of 1935; and

(*b*) Quantities and percentages of various grades of bulk butter examined in Victoria from 1st July, 1936, to 30th January, 1937, in comparison with the corresponding period of 1935-36.

FACTORY PRODUCTION OF BUTTER AND CHEESE IN VICTORIA (QUANTITIES IN TONS).

Month.	Butter.		Cheese.	
	1936.	1935.	1936.	1935.
July and August	5,986	7,404	614	652
September	6,727*	6,159	526	504
October	8,564†	9,309	747*	689
November	9,300†	10,136	824†	681
December	9,000†	8,476	736†	579
Totals, 6 months	39,577	41,484	3,447	3,105

* Revised. † Subject to revision.

BULK BUTTER EXAMINED FOR EXPORT IN VICTORIA (QUANTITIES IN TONS).

Period.	1936-37.					Period—	1935-36.				
	How Graded—				Total.		How Graded—				Total.
	Ch.	1st.	2nd.	Pty.			Ch.	1st.	2nd.	Pty.	
1st July to 26th December ..	16,249	5,484	1,348	155	23,236	1st July to 28th December ..	17,122	7,875	1,707	200	26,904
27th December to 30th January ..	5,466	1,265	506	112	7,349	29th December to 1st February ..	3,107	1,959	488	93	5,647
Totals 1st July to 30th January ..	21,715	6,749	1,854	267	30,585	Totals 1st July to 1st February ..	20,229	9,834	2,195	293	32,551
Percentages ..	71·0	22·1	6·0	0·9	..	Percentages ..	62·1	30·2	6·8	0·9	..

Botulism in Horses

(Forage Poisoning)

By R. N. Wardle, B.V.Sc., Veterinary Officer.

EVERY year, particularly during the summer and autumn, reports are received by the Chief Veterinary Inspector of mortality in farm horses. From investigation by officers of the Department many of these cases are diagnosed as Botulism. Isolated cases may occur in any part of Victoria, but in northern districts the disease occurs on many farms in defined localities at or about the same time. This is particularly noticeable during mouse plagues.

The name botulism is quite well known throughout the country and should be used in preference to "forage poisoning," which term is more likely to be used for cases of mortality of obscure undiagnosed conditions not necessarily botulism.

Nature and Cause.

The disease is a food poisoning resulting when animals eat fodder containing the toxin or poison produced by a certain microbe (*Clostridium botulinum*), which grows and multiplies in decomposing fodder, or in the carcasses and bones of animals and birds: that is, the microbes attack dead tissue only, and it is the poison produced in this dead tissue that, if ingested with the food, produces the disease. Botulism is not infectious nor contagious, it is not transferred from one live animal to another, nor is it necessary for the germs to enter the living animal. The toxin, which is soluble in water, is one of the most powerful poisons known. In common with other bacterial poisons it produces its effects only after a definite interval, which is from three to seven days.

When growth and multiplication of the organism ceases because of lack of certain essential conditions, spores are formed. These spores are very resistant to outside influences, and will retain their vitality even when dry, and then they may be carried about in dust or other dry material.

Conditions for Growth.

As mentioned previously, the organisms live in decomposing animal or vegetable material. Warmth, moisture and an absence of oxygen (or air) are essential for growth and multiplication and it is only during rapid growth that the organisms produce the toxin.

The fact that an absence of oxygen is necessary for growth probably prevents the disease from being more common. It is found, however, that the microbes can grow in decaying material exposed to air, provided moulds are present. Moulds grow on the surface of material, but immediately beneath the mould, the oxygen of the atmosphere is used up and thus conditions are made suitable for the multiplication of the causal organism. At one time it was thought the disease was attributable to the moulds, but whereas mouldy fodder itself may produce slight digestive disturbance it will not produce the disease we now term botulism.

Sources of Causal Organism.

Sources of the causal organism and its toxin are as follows:—

(1) Hay, chaff, or grain damaged by water, and probably mouldy.
(2) Fodder contaminated by mice.
(3) Fodder in mangers contaminated by dust or water percolating from old straw-covered stables.
(4) Old grass paddocks of a tussocky nature, or long stubble trampled into a mat.
(5) Butts of stacks; cocky chaff left in paddocks after harvesting.
(6) Manure or manure-contaminated fodder.
(7) Water polluted by stable drainage.

The disease has a seasonal incidence, mainly because fodder is most likely to be damaged by the warm summer and autumn rains during harvesting and storing operations. Mouse plagues also take place in the autumn.

The nests of mice and the bodies of dead mice in fodder form ideal conditions of warmth and moisture for the growth of moulds and other organisms, and if the *Clostridium botulinum* be present the production of toxin will result. These facts explain why the disease is more prevalent in plague years, when it is a difficult matter to protect hay, chaff, and grain from contamination

by mice. In times of drought also, numbers of cases occur, for, consequent on scarcity of good fodder, damaged hay and grain are used for feeding stock.

It is possible also that mice may carry the germs from the soil into chaff or hay, and there the germs may grow and multiply in and around the mouse nest and produce the toxin. Further, the mice may carry minute pieces of decaying vegetation impregnated with the poison into clean, sound fodder.

Many cases investigated in northern Victoria have been traced to old straw-covered stables, particularly where the mangers are situated in such a way that summer and autumn rains can percolate through the straw and drop into the feed. These old straw roofs form good conditions for vegetable decay, as well as harbours for mice and birds. They act as stores for the bacterial poison which, being soluble in water, is readily carried through by rain.

Pasture Infection.

It is interesting to note that outbreaks of botulism have been reported where animals were not hand-fed, and had no access to decaying vegetable refuse around stacks, &c. As a result of investigation, it has been found that the poisonous fodder consisted of dead and decaying grass found at the base of tussocks and tufted grasses. Mouldiness is often seen around the bases of such tussocks, and this is a condition suitable for the development of the poison. Other material in the field in which the causal organisms will thrive is cocky chaff from winnowing during harvesting or threshing operations; this material, if damaged by rain, will decay and may become infected.

Manure of any animal is of course decomposing material, and as it is moist and warm, forms a suitable medium for the production of toxin of the causal organism of botulism. Cases of the disease have been traced to the eating of fodder contaminated by poultry manure, while it is not uncommon for horses to have a depraved appetite, in which case they will actually eat dung.

Other outbreaks have been traced to pollution of the water supply. One very striking instance of this was brought under the notice of the Department in 1936 by a private veterinarian. Two horses died from botulism some few days after being allowed to water from a surface dam into which drainage from the stable and stable yard found its way. No other likely source of the poison was discovered. On inquiry it was found that some seven or eight years previously horses had died from botulism on this property, and the officer investigating had instructed the owner to fence off this dam. This was done and no further cases occurred until 1936, when, through failure of a windmill, the horses were allowed access to the water close to the stable.

Owing to the solubility of the toxin, it may be washed from the part where it was produced to an apparently clean portion of the fodder, and further, owing to the interval of time between the eating of the fodder and the development of symptoms, it is often difficult to obtain a sample of the poison-contaminated fodder.

Symptoms.

The symptoms of botulism vary somewhat, but in general they are marked by paralysis of the various muscles. The animal becomes dull and listless and there are irregularities in its gait; it may knuckle over and stumble as it moves along. The eye is noticeably dull and the eyelids often partially closed, and the head appears to be "heavy." In many cases there is interference with the functions of eating and mastication, strings of saliva and wisps of fodder may be seen hanging from the mouth.

Later the paralysis of the various muscles increases, and the animal becomes prostrate, often showing a paddling movement of the limbs while in such position. Acute cases sink into a semi-comatose condition, and death takes place in a few hours. In those cases in which the patient eats and drinks, the disease will run a chronic course over a period up to several weeks if slinging be carried out. Even then, however, a favorable prognosis can rarely be given.

Colt showing signs of irregular gait.
[After Seddon.

Showing wisps of fodder hanging from the mouth of a filly. Note also dull and listless appearance.

[After Seddon.

Because many animals have access to the poisonous forage at the same time, it is usual for more than one animal to be affected, but the disease is not transferred from one live animal to another.

Treatment.

Botulism has a particularly high mortality; indeed, but few affected animals recover. Thus in the case of horses where single working animals are worth up to £50, the actual monetary loss to any one farmer may easily run into hundreds of pounds, while the loss from the shortage of working horses on a farm on which there are several cases is difficult to compute.

Where horses lapse into coma or unconsciousness, nothing can be done, and farmers with experience of the disease usually resort to the friendly bullet rather than allow hopeless cases to linger.

In those cases in which the patient is fairly bright, and eager to eat and drink, and makes a bid for life, it is recommended that the horse be placed in slings and nursed. A laxative diet easily eaten is indicated—green feed, small bran mashes, &c. It should be noted that slinging is quite useless unless the horse is able to stand after being raised to its feet, the sling being used to prevent its falling down.

Drenching should be avoided if possible, as often there is difficulty in swallowing. Warm soapy-water enemas may be given several times a day. Epsom salts, from two to four packets, may be dissolved in the water with which the mashes are made, and the following mixture may be given :—

Powdered	Potassium nitrate	.. 1 oz.
,,	Sodium salicylate	.. 1 oz.
,,	Red cinchona bark	.. 1 oz.
,,	Nux vomica ..	.. 2 oz.
,,	Ammonium carbonate	.. 4 oz.
,,	Linseed meal ..	.. 3 oz.

These ingredients are mixed together. One ounce of the mixture is mixed with treacle and water, and pasted on to the horse's tongue with a flat stick, each morning and evening.

Under the most favorable conditions, some few horses will make a recovery, but they must be kept in the trevis-like sling for many weeks. For the first two weeks at least it is inadvisable to take the patient out of the sling at all. By that time, if progress has been made, an experiment might be tried by leading the horse out for a very short walk. As it is being led out of the trevis one man should take hold of its tail while two others should support each hip. Twenty or 30 yards should be sufficient for the first day. If that exercise is satisfactory, a gradual increase is made in the daily walk, and after perhaps two weeks of this, or as progress suggests, the patient may be allowed free during the day, but placed in the sling again at night until satisfied that the horse can rise without aid.

The type of sling that proves satisfactory is that constructed with four posts with a stout rail along each side, from which strong sacking supported by straps or ropes can be used for the support of the horse. A breast-plate and breeching of rope completes the sling. This trevis, as it really is, if erected in an open type of shed, allows an arrangement whereby the horse can be conveniently led in and out without backing or turning sharply.

Control Measures.

In discussing this disease, the old maxim which states that "prevention is better than cure," is particularly apt. If sound fodder only be used and if precautions are taken to prevent contamination by mice or with manure, botulism cases will be unlikely to occur, therefore, it is necessary to take every precaution to protect hay, chaff, and grain from damage by rain or by mice.

Poultry should be kept out of the stables and fodder barns, which latter should also be, as near as possible, mouse-proof.

All straw-roofed stables should be inspected. Those beyond repair should be pulled down. In

[*Continued on page* 146.

Nhill Crop and Fallow Competition, 1936

Report of the Judge—A. J. Vasey, B.Agr.Sc., Cereal Research Officer.

Special observation plots, Salisbury. The promising crossbred Major × Free Gallipoli can be seen growing in the two centre plots.

THE wheat crops exhibited in the 1936 Nhill Crop and Fallow Competition were definitely good, despite seasonal conditions which at more than one period caused considerable anxiety.

As in 1935, the early months of the year were dry, no useful rain being received until the end of May and, while seeding conditions in the following few weeks were good, the soil was rather too cold for a good germination of weeds before the final cropping operations. During July extremely wet weather was experienced, resulting in local flooding and loss of crop in low lying patches. In August growth was slow on account of low temperatures, though moisture conditions were good. Rainfall was light in September and the early part of October, but the position was relieved by a good fall on the 17th of that month. The rain received after this date was only moderate in amount, but the cool weather conditions prevailing permitted the crops to make the best use of the moisture available and they generally finished well. This is fairly indicated by the fact that the estimated average yield of the ten entries in the Open Crop section was 38 bushels per acre.

Needless to say, such seasonal conditions as those just described left their mark on the crops, mainly in the degree of weed infestation and unevenness due to flooded patches.

Varieties.

Ghurka was the variety shown in the majority of entries inspected, and where grown on clean black land had proved most satisfactory, thus confirming the results obtained on the Salisbury plots, where it has out-yielded Free Gallipoli for several years. Its capacity for extremely high yields under favorable conditions is well illustrated in this year's winning crop. For mixed country, however, Free Gallipoli remains a reliable variety, and for red ground, particularly on the Mallee fringe, it is suggested that Ranee 4H be given a more extensive trial.

Several good crops of the recently introduced varieties, Dundee and Baringa, were seen, but recommendations regarding these varieties cannot be given until they have been under test for longer periods. In the Mallee areas in the northern part of the district the value of Ranee 4H tends to be underestimated. It was encouraging to see the new production, Major x Gallipoli, holding to the same high standard of yield on broad acres as it has recorded in the experimental plots.

Trueness to Type.

Generally speaking, the type of the crops exhibited was very good indeed, though in several of the entries scattered heads of barley were observed, and there was one case of serious mixing of varieties. Most of the seed of Dundee

and Baringa had been obtained from district farmers, and the growers of these varieties in 1935 are to be complimented on the very evident care they had taken with harvesting operations to obtain such pure seed.

Disease.

The crops as a whole were comparatively free from disease. The widespread use of Ghurka had satisfactorily controlled flag smut, the infection with loose smut was very light, and no ball smut was observed. In only one crop, which was grown on rather loose country fallowed from grass, were "dead-heads" at all prominent.

Weeds.

The problem of weed control, as elsewhere, is a vital one in the Nhill district, where the two most troublesome plants are mustard and wild oats. Many farmers were greatly perturbed that, despite the greatest care with the fallows, this year's crops were so dirty. It is probably fair to say that this condition was the result of two successive dry autumns, so that in both the fallow and crop year no really satisfactory germination of weeds was obtained on the areas on which these crops were grown. It should not be overlooked that the preparation of a soil condition to encourage a rapid germination of weed seeds is an important part of the fallowing practice, to which end autumn cultivations should be directed. In this connexion the observation may be recorded that in several instances, where an April harrowing had been given after a few points of rain, clean crops resulted, though the germination of weeds did not take place till over a month later.

It is well known that, on account of its habit of growth and short straw, the variety Ghurka is not a good competitor with tall growing weeds. It is suggested that an increase in the rate of

Section 1.—Best 50 Acres of Wheat Crop.

Competitor.	Variety.	Yield.	Purity and Type.	Absence of—		Evenness.	Crop Total.
				Weeds.	Disease.		
Maximum Points ..	.. .. ..	35	20	15	15	15	100
J. Clark	Ghurka	35	19	14	14	15	97
E. W. Dahlenburg	Major x Gallipoli ..	33	19	13	14	15	94
J. and T. W. Rintoule, No. 2	Ghurka	31	19	14	14	13	91
J. and T. W. Rintoule, No. 1	Baringa and Dundee ..	28	18	14	14	14	88
G. Batson	Ghurka	27	19	14	14	14	88
A. Dahlenburg, No. 1 ..	Free Gallipoli ..	28	19	13	14	13	87
A. Dahlenburg, No. 2 ..	Free Gallipoli ..	26	19	12	13	13	83
C. P. Dahlenburg	Ghurka	24	17	13	13	13	80
H. H. Sanders	Ghurka and Baringa ..	24	17	12	13	13	79
P. W. Pilgrim	Dundee and Baringa ..	23	17	13	13	13	79

Section 6.—50 Acres Black Land Fallow, 1935, and the Crop Thereon, 1936.

Competitor.	Variety.	Yield.	Purity and Type.	Absence of—		Evenness.	Crop Total.	Fallow Total, 1935.	Fallow and Crop.
				Weeds.	Disease.				
Maximum Points ..	.. .. ..	35	20	15	15	15	100	100	200
* J. Clark	Ghurka	35	19	14	14	15	97	96	193
E. W. Dahlenburg, No. 2	Major x Gallipoli ..	33	19	13	14	15	94	93	187
G. Batson	Ghurka	27	19	14	14	14	88	98½	186½
* C. P. Dahlenburg, No. 2 ..	Ghurka	26	19	13	14	14	86	97	183
* P. Bone	Ghurka	26	19	13	14	13	85	97½	182½
* E. G. Hoffman	Dundee	26	19	13	13	13	84	97	181
C. P. Dahlenburg, No. 1 ..	Ghurka	24	17	13	14	13	81	98	179
* E. W. Dahlenburg, No. 1	Ghurka	19	19	12	14	13	77	97	174
* R. Blackwood	Dundee and Ghurka ..	24	17	13	13	13	80	87	167
* H. H. Sanders	Ghurka and Baringa ..	24	17	12	13	13	79	96	165

* Denotes entry in E. Bound and Sons' Competition.

Replicated variety trials at Salisbury.

seeding of this variety to 90 lb. per acre would be advantageous in this connexion, but it probably would be wiser to grow a taller-strawed variety when it is expected that weeds will be troublesome.

Rotation.

A considerable area of the land under cultivation in the Nhill district is farmed on a three-course rotation of wheat, oats or pasture, and fallow, and under such a scheme the cash return per acre in the second year is often not very great. It is felt that this report would be incomplete without some reference to the success which has been achieved by many farmers with Wimmera rye-grass as pasture in this position in the rotation.

The seed of this species is sown with the wheat crop on the fallow at the rate of 3 to 6 lb. per acre and allowed to reseed in the stubble. The grazing obtained far exceeds in value that from the natural pasture, and carrying capacities of up to six sheep per acre, in the spring, have been recorded. So vigorous is the growth of the rye-grass that an almost complete suppression of barley-grass is obtained, and even when grazed quite heavily in the spring a fair amount of excellent dry feed is produced. Some anxiety may be felt about the difficulty of controlling the grass when the land is again brought into cultivation. From inquiries made during the judging of the competition, it would appear that this has not been a problem on black ground where the shear harrows have been used and summer fallow practised. It may be more difficult on red land, and the advice may be offered that the rye-grass should be sown on this type of country only when the paddock is to be left out for some years.

The temporary ley, which this one-year pasture constitutes, is a very important feature of the farming systems in older settled countries, and it is probable that the increased returns from the use of Wimmera rye-grass at this point in the rotation will do much to increase the popularity of such a system in this district.

Competition Crops.

On Black Land.

As mentioned earlier, the general standard of the competition crops was most creditable, and in no case was this better illustrated than in the winning entry of Section 1, exhibited by Mr. J. Clark, of Kinimakatka. The variety sown was Ghurka, and the excellence of the crop indicated how very productive this variety can be on clean black land. The yield was estimated to be at least 50 bushels per acre, and the crop was an outstanding one in the district, being of excellent type and with weed growth reduced to a minimum. The fallow had been prepared from oat stubble by the following workings; scarified in March, spring-toothed in June, cross-harrowed (shears) in July, spring-toothed in October, harrowed in November and December. The crop was sown with the combine in June at the rate of 90 lb. of seed per acre with 100 lb. superphosphate and harrowed immediately. Slightly over twelve inches of rain was received during the period May–November. Second place in this section goes to Mr. E. W. Dahlenburg's entry. The crop was of an un-named crossbred variety, and was only slightly inferior to the winning entry in point of yield. The Messrs. Rintoule's entry of Ghurka was placed third, and although a very nice crop, it lost a point for irregularity in drilling.

The average amounts of seed and superphosphate applied to the crops in this section were 70 and 75 lb. per acre respectively.

In the section for the combined crop and fallow on black land, the entries occupying first and second place are the same as those occupying similar positions in Section 1. Mr. G. Batson gained third award with a very sound crop of Ghurka.

On Mallee Land.

The Mallee crops on the whole were quite satisfactory. The crop of Ghurka, for which Mr. J. C. Buckley is placed first, was estimated to yield eleven bags, about two bushels per acre better than the adjoining crop of Baringa with which Mr. R. D. Buckley gained second award. Both were good, fairly clean crops on scarified winter fallow, which was cleaned of a crop of paddymelons in April with considerable ingenuity and without spoiling the fallow. The method adopted was to first harrow the vines out straight and then to cut them to pieces with a Barger disk, set as straight as possible and working at right angles to the harrowing. Both crops were put in with the combine in mid-June, sowing 70 lb. of seed and 60 lb. of superphosphate. The entry of the Messrs. Dufty, while promising to yield as well as the winning crop, lost points for variations in type and for weed growth. Their No. 2 entry of Ranee 4H was on rising red ground and, while not such a high yielding crop as the Ghurka on the flats, indicated the suitability of this variety for this class of country.

In the section (7) for crop and fallow on Mallee land, the Messrs. Dufty were successful with another entry of Ghurka which, though appearing slightly lower in yield than that just mentioned, was a very even clean crop. It was grown on summer fallow ploughed from grass with the

Section 2.—50 Acres of Wheat Crop Grown on Mallee Land.

Competitor.	Variety.	Yield.	Purity and Type.	Absence of—		Evenness.	Crop Total.
				Weeds.	Disease.		
Maximum Points ..	.. .. ..	35	20	15	15	15	100
J. C. Buckley	Ghurka	35	19	14	14	13	95
R. D. Buckley	Baringa	33	19	14	14	14	94
A. C. and A. H. Dufty, No. 1	Ghurka	35	17	13	14	14	93
T. G. Marshall	Ghurka	31	18	14	14	13	90
A. C. and A. H. Dufty, No. 2	Ranee 4H	30	18	13	14	14	89
J. C. and R. D. Buckley ..	Ghurka	28	18	14	14	13	87
H. E. Simmering	Ghurka	32	16	12	14	12	86
H. Leyonhjelm	Free Gallipoli and Ghurka	20	19	13	14	13	79

Section 7.—50 Acres of Fallow on Mallee Land, 1935, and the Crop Thereon, 1936.

Competitor.	Variety.	Yield.	Purity and Type.	Absence of—		Even-ness.	Crop Total.	Fallow, 1935.	Fallow and Crop.
				Weeds.	Disease				
Maximum Points ..	.. .. ..	35	20	15	15	15	100	100	200
A. C. and A. H. Dufty ..	Ghurka	35	18	14	14	14	95	95½	190½
T. G. Marshall	Ghurka	33	18	14	14	13	92	95	187
R. D. Buckley	Ghurka	30	18	13	14	12	87	95	182
J. C. Buckley	Ghurka	26	18	13	14	12	83	95	178
H. Leyonhjelm	Free Gallipoli and Ghurka	21	19	13	14	13	80	96	176

Section 8.—25 Acres of Red Fallowed Land, 1935, and the Crop Thereon, 1936.

Competitor.	Variety.	Yield.	Purity and Type.	Absence of—		Evenness.	Crop Total.	Fallow, 1935.	Fallow and Crop.
				Weeds.	Disease.				
Maximum Points ..	.. ..	35	20	15	15	15	100	100	200
J. Clark	Baringa ..	35	16	13	14	14	92	93	185
C. P. Dahlenburg, No. 1	Ghurka ..	24	18	13	14	14	83	96	179
H. Leyonhjelm ..	Ghurka ..	22	19	12	14	12	79	96	175
C. P. Dahlenburg, No. 2	Ghurka ..	20	19	12	14	12	77	97	174

Smoke . . .

"LUCKY HIT" TOBACCO

Plug and Cut

A BLEND CONTAINING CHOICE SELECTED AUSTRALIAN GROWN LEAF

The British-Australasian Tobacco Co. Pty. Ltd.

FOR BIGGER AND BETTER CROPS

dress all your seed with

'CERESAN'

BAYER'S DRY SEED DRESSING

(U.T. 1675 a) TRADE MARK

'CERESAN' IS THE FIRST DRY SEED DRESSING THAT IS FULLY EFFECTIVE ON WHEAT, BARLEY, OATS AND OTHER SEED.

In addition to controlling diseases, 'CERESAN' stimulates germination and GIVES AN INCREASED YIELD OF A BETTER TYPE OF GRAIN.

'CERESAN'-treatment is not an experiment. It has been tested and proved to be the best seed dressing that science can provide and is endorsed and advocated by world authorities.

'CERESAN' is a product of the celebrated »Bayer« -Laboratories who stand supreme in the field of scientific research.

BAYER

Avail yourself of the outstanding benefits of 'CERESAN' by treating all your WHEAT, BARLEY, OATS, MAIZE and OTHER SEED WITH 'CERESAN'.

Distributors: DALGETY & COMPANY LTD.

(Incorporated in England)

COSTS LESS THAN 5d. PER ACRE

THE VICTORIA HERD

of Red Poll Cattle

Maintained for Milk and Beef at the State Research Farm, Werribee.

BULL CALVES

Six For Sale at Reduced Prices

No. 1. VICTORIA DONALD. (AA., C.R.). Born 16th March, 1935 *Price* 30 guineas
Sire : Woodburn Peter Pan (Imp. in utero) (1504 AA). *Dam :* Victoria Rose Major (5AA). f.o.r. Werribee.
Victoria Rose Major produced 455 lb. butter-fat in 273 days, and 531 lb. in 365 days. (An AA Bull).

No. 2. VICTORIA VALHALLA (A., C.R.). Born 14th December, 1935 .. *Price* 19 guineas
Sire : Chandpara Valentine (762 AA). *Dam :* Victoria Asphodel (3008 A). f.o.r. Werribee
Victoria Asphodel produced 322 lb. butter-fat as Jr. 4 (273 days).

No. 3. VICTORIA GRATITUDE. (A., C.R.). Born 24th April, 1936 .. *Price* 18 guineas
Sire : Chandpara Valentine (762 AA). *Dam :* Victoria Gratification (3022 A). f.o.r. Werribee
Victoria Gratification produced 330 lb. butter-fat in 273 days as Jr. 2.

No. 4. VICTORIA ST. PETER. (A., C.R.). Born 29th July, 1936 .. *Price* 13 guineas
Sire : Woodburn Peter Pan (Imp. in utero) (1504 AA). *Dam :* Victoria Kosher (3914 A) f.o.r. Werribee
Victoria Kosher produced 286 lb. butter-fat in 273 days as Sr. 3.

No. 5. VICTORIA ROYAL PETER. (AA., C.R.). Born 4th August, 1936 *Price* 20 guineas
Sire : Woodburn Peter Pan (Imp. in utero) (1504 AA). *Dam :* Victoria Royal Regal (3517 AA). f.o.r. Werribee
Victoria Royal Regal has produced 271 lb. butter-fat in 273 days as Jr. 3. (An AA Calf).

No. 6. VICTORIA OHM (A., C.R.). Born 25th October, 1936 *Price* 15 guineas
Sire : Victorian Gallant (1481 AA). *Dam :* Victoria Volt (4049 B). f.o.r. Werribee
Victoria Volt produced 398 lb. butter-fat in 273 days as Jr. 4.

Prices are based on the average butter-fat production of the dam in 273 days, except in the case of progeny of heifers without completed test, the price then being 10 guineas.

An amount of 2 guineas per quarter maintenance has been added to calves 3 months old and over.

Inspection cordially invited. For further particulars apply to—

THE DIRECTOR OF AGRICULTURE, MELBOURNE, C.2 ; OR THE MANAGER, STATE RESEARCH FARM, WERRIBEE

disk in March, which received four subsequent cultivations before harvest. In January the land was harrowed, cultivated with the combine in May, and sown in early June with 60 lb. of seed and 75 lb. of superphosphate per acre and harrowed ten days later. Mr. T. G. Marshall gained second place in this section with a crop of Ghurka, which promised to yield within a bag to the acre of the winning entry but was not quite so even. It was, however, a very clean crop, the result, it was suggested, of a harrowing given the fallow in April.

On Red Land.

Only four crops were exhibited in the red land section, of which the winning entry, that of Mr. J. Clark, was outstanding in regard to yield. The variety shown was Baringa, and it was regrettable that an otherwise fine entry should have been spoilt by a serious mixing of varieties. The ploughed winter fallow on which it was grown had been harrowed twice, and then given a spring-tooth cultivation in September and a scarifying in October. Later it was harrowed in November and again in May and combined in early June with 90 lb. of seed and the same amount of superphosphate per acre and was twice harrowed after sowing.

E. Bound and Sons' Competition.

The E. Bound and Sons' competition, which extended over a four-year period, was for the highest number of points obtained for 50 acres of black fallowed land in 1933, 1934, 1935 and the crops grown thereon.

With the judging of this year's crops, the competition is concluded, the winner being Mr. J. Clark, with Mr. C. P. Dahlenburg in second place, and Mr. E. W. Dahlenburg third.

The Fallows.

The essential features of the fallowing practice are well appreciated in the Nhill district, as evidenced by the quality of the exhibits in these sections of the competition. It is apparent that most farmers have in mind, for their own particular soil, an ideal condition at which they aim, suiting the type and number of cultivations given to achieve this end, to the varying seasonal conditions.

Section 3.—50 Acres Black Fallowed Land, 1936, and Crop, 1937.

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation and Seed-bed.	Total.
Maximum Points ..	25	25	25	25	100
H. H. Sanders, No. 1 ..	24	24	24	24	96
E. W. Dahlenburg, No. 1 ..	24	24	24	23	95
C. P. Dahlenburg, No. 1 ..	24	24	24	23	95
H. H. Sanders, No. 2 ..	23	24	24	23	94
E. W. Dahlenburg, No. 2 ..	23	24	24	23	94
G. Dahlenburg	23	24	24	23	94
J. Clark	23	24	24	23	94
G. Batson	23	24	23	23	93
A. Dahlenburg	23	24	24	22	93
C. P. Dahlenburg, No. 2 ..	23	23	23	22	91
P. Bone	23	23	22	22	90

The necessity for efficient weed control in late spring and summer to protect the reserves of moisture and plant food established by the earlier workings cannot be stressed too strongly, and for this purpose it would appear that the shear harrows have a definite place. It should be pointed out, however, that even with the improvement in the shears, this implement remains a harrow and is not a cultivator, and should not

E. Bound and Sons' Competition.

Competitor.	Fallow, 1933.	Crop, 1934.	Fallow, 1934.	Crop, 1935.	Fallow, 1935.	Crop, 1936.	Total.
Maximum Points	100	100	100	100	100	100	600
John Clark	95	80	96	97	96	97	561
C. P. Dahlenburg	96	93	97	91	97	86	560
E. G. Hoffman	93	92	92	81	97	84	539
E. W. Dahlenburg	97	83	97	87	97	77	538
H. H. Sanders	94	84	96	89	96	79	538
P. Bone	96	82	93	83½	97½	85	537
R. Blackwood	95	87	95	79½	87	80	523½

be used in place of such an implement in early spring. Once mulch and seed-bed have been properly developed, however, seedling weeds may be controlled most efficiently on black land by shear harrowing, and provided the operation is not done too soon after rain, the desired depth of mulch is easily maintained.

From an inspection of the entries this year, it was apparent that very satisfactory results had been obtained on summer fallowed land by three spring cultivations, followed by a shear harrowing in November, where weed growth made this necessary.

The winning entry in Section 3 (black land) was that of Mr. H. H. Sanders, of Miram. This had been ploughed from grass with the disk in March, scarified in June and early August, combined in September, and scarified again in early November, and was a very fine fallow in all respects. The two entries in second place were also of summer fallow and, though very attractive exhibits, did not quite come up to the winning exhibit in the condition of the seed-bed.

SECTION 4.—25 ACRES RED FALLOWED LAND, 1936, AND CROP, 1937.

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation and Seed-bed.	Total.
Maximum Points ..	25	25	25	25	100
J. Meagher	24	24	24	24	96
J. C. Buckley	23	24	24	24	95
C. P. Dahlenburg	24	24	23	24	95
H. H. Sanders	24	24	23	23	94
J. Clark	23	24	24	22	93
G. Dahlenburg	24	24	22	23	93
H. Leyonhjelm, No. 1 ..	23	24	22	22	91
R. D. Buckley	22	24	22	22	90
Meagher and Deckert ..	23	23	22	22	90
H. Leyonhjelm, No. 2 ..	22	23	23	22	90

SECTION 5.—50 ACRES MALLEE LAND FALLOW, 1936, AND CROP, 1937.

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation and Seed-bed.	Total.
Maximum Points ..	25	25	25	25	100
R. D. Buckley	24	24	24	23	95
T. G. Marshall	23	23	24	23	93
J. C. Buckley	24	24	22	22	92
H. Leyonhjelm	23	23	23	23	92
H. E. Simmering	22	24	21	22	89

No fewer than ten entries were inspected in the section for red land fallow, and they made a good class, all fallows being in very fair order. Winter fallowing was the general practice, followed by two spring cultivations. The winning entry was shown by Mr. J. Meagher, and was a very nice piece of work. Ploughed in July, it had been cultivated with the combine in September and first week in November, and had a mulch of very desirable texture and evenness of depth. In this latter feature it was superior to the entry of Mr. Buckley and in freedom from weed growth to that of Mr. Dahlenburg.

In the Mallee section Mr. R. D. Buckley is placed first with a very creditable entry, which had been scarified in July and again in August and cultivated with the spring-tooth in October.

Crop and Fallow Competition

Kerang District, 1936

Report of the Judge, A. B. Hackwell, B.Agr.Sc., Agricultural Instructor

THE past season at Kerang was by no means an ideal one for wheat cultivation owing to the very erratic distribution of the rainfall. After a severely dry autumn, rains totalling 10 inches were received from June to November. This actually was two inches in excess of the average for the period, but, unfortunately, 8½ inches fell during the winter months, June to August, and less than two inches in the spring.

The monthly falls in 1936 and the averages for the previous 55 years are as follow :—

	1936.	Average 55 Years.
January	205	70
February	32	87
March	6	107
April	65	106
May	39	146
June	260	162
July	454	123
August	129	139
September	36	138
October	132	137
November	18	99
December	204	119
Total	1,580	1,433

Most farmers held-off sowing until the season broke with a splendid rain early in June. A good clean germination was experienced generally, but excessively wet conditions prevailed during July, 4½ inches of rain being received that month. Normal falls followed in August, and the crops up to that stage had stooled well, and made good early growth. As the wheat was coming into ear, a long rainless period set in throughout the critical month of September, and many crops suffered severely. Timely rains in October saved the situation, but further dry conditions continued throughout the filling-out and maturing stages. Fortunately, the weather at this period remained pleasantly cool, and this compensating feature enabled the grain to fill out satisfactorily. A few crops however ripened-off very quickly following three days of very hot weather late in November, and in these the yields would be reduced accordingly.

The nine crops in the competition were estimated to yield an average of 24 bushels per acre—a very creditable return considering that the important spring rains were only half the normal amount. Another feature of the season was the extent to which the soil in practically all the crops had cracked between the drill rows. This of course is common in Wimmera crops, but according to the local farmers it had never previously occurred in the heavy Mallee soils, characteristic of this particular wheat area.

All crops but one were sown with Ghurka or Ranee 4H, the two varieties recommended for general sowing in the district. From 65 to 70 lb. of seed was used in each case, and an average dressing of 90 lb. of superphosphate was applied, the rates ranging from 80 to 100 lb. per acre.

Loose Smut.

Loose smut was the main disease in the wheat crops this season, and not only was it present in some of the competition exhibits at Kerang, but it also had developed fairly extensively in a number of crops throughout the district, as well as in other localities in the wheat belt, chiefly in the southern Mallee. In many instances, the disease caused appreciable losses in yield, and as a general rule it was most severe in crops which had been sown with seed that had been in use for several years.

Loose smut, which is known also as blow smut, is one of the common wheat diseases, and in most seasons, it is usually present in the crops to a minor extent, affecting only a few heads. It makes its appearance in the crop at flowering time, when affected heads develop into a mass of loose, black powder, in place of the normal wheat grains. This powder is really the seeds or spores of the disease. It is blown by the wind or washed-off by rain, leaving only the bare backbone of the head, usually blackened by a little smut which remains at the joints. No grain is produced in the affected heads.

Infection takes place at flowering time when the wind-borne spores enter the flowers of healthy wheat heads. The grain is formed in the usual way, except that the disease is enclosed inside it. Such infected grain cannot be distinguished from healthy seed, but when sown in the following season, it may produce smutty plants. And so the cycle goes on.

The loose smut which developed in the crops this year was present, in a dormant condition, inside the seed wheat at sowing time, having entered that grain when it was formed in the spring. The fact that loose smut is dormant inside the grain means that pickling the seed cannot kill the disease, and the presence of this disease in a crop is no reflection on the efficacy of the pickle that was used. Pickling, of course, is carried out to kill ball smut, and it is effective on this disease as the spores of this fungus adhere to the outside of the grain, where they can be readily killed by the pickling treatment.

Weather conditions in spring-time, during the flowering stage of wheat, play an important part in the spread of loose smut. Apparently the conditions in the previous spring (1935) were particularly favorable for infection, and this would account for the extra amount of this disease present this season. Seasonal conditions at the time the infected grain is sown also have some influence on the extent to which the disease subsequently develops in the crop.

The amount of loose smut in any particular crop, consequently, is dependent on the amount of disease in its parent crop (from which the seed was harvested), and more important still to the suitability for infection of the weather conditions, when the parent crop was in the flowering stage. All wheat crops (or varieties), do not flower at exactly the same time; some may experience ideal conditions for infection by the spores, while for others the conditions may not be so favorable. These factors explain why the disease may be more severe in particular crops than in others.

Continued research has been undertaken to devise a satisfactory method of combating loose smut, but owing to the peculiar way in which it is carried over from season to season, a simple and effective means of control is not available. The only practicable means of control is to use seed from a crop which is as free from the disease as possible. To do this, it is necessary to inspect the standing crop, preferably before it ripens, when affected heads can be more readily seen. When an appreciable amount of loose smut is present it is desirable to use a change of seed.

Another means of control is what is known as the Tapke hot-water method. This consists of soaking the seed wheat for an extended time (not less than 1 hour 40 minutes) in hot water, kept at a constant temperature of 120° F. The heat penetrates into the grain and kills the dormant disease inside. If the water is too hot, of course, it may kill the wheat. This method is rather too complicated for use on an ordinary farm. It is employed at the State Research Farm, Werribee (where special facilities are available), and a large proportion of the wheat sown on that farm is treated in this manner.

Flag Smut.

Although most growers are familiar with loose smut, the disease is often confused with flag smut. The latter has a different effect on the plants, in that it appears as black parallel lines on the stem or flag. The leaves become curled and twisted, and the infected stools seldom produce any heads. The spores of flag smut are carried over in the soil, and, to combat the trouble, it is necessary to farm the land with a view to eradicating the disease from the ground by means of crop rotation, stubble burning, and good fallowing. The simplest method is to sow Ghurka wheat on infected land, as this variety is practically resistant to flag smut.

The Awards.

The competition was for the best 100 acres of fallow and the crop grown thereon, and it was won this year by a new competitor, Mr. G. Mahar, with a splendid crop of Ghurka and Ranee 4H. His crop was located on a large flat which became heavily flooded with the winter rains, some 60 acres being under water for several weeks. The wheat successfully withstood the wet conditions, and produced a very dense crop over the bulk of the area. The heads were particularly well filled, and the exhibit was estimated to return the highest yield in the competition. It was grown on rich chocolate loam which had been summer-fallowed in February, scarified in winter, and worked three times with the springtooth, and harrowed once during the period August to October. It was again springtoothed after the summer rains, and half the area was finally worked over early in June. The crop was sown in the middle of June with 65 lb. of seed, and 80 lb. of superphosphate per acre.

A few wild oats were present, also a fair amount of loose smut particularly in the Ranee 4H.

The detailed awards are set out in Table I.

TABLE I.—AGGREGATE COMPETITION—100 ACRES OF FALLOW 1935, AND THE CROP 1936.

Competitor.	Variety.	Yield.	Purity and Type.	Absence of—		Evenness.	Crop Total.	Fallow 1935.	Fallow and Crop.
				Weeds.	Disease.				
Maximum Points ..	—	35	20	15	15	15	100	100	200
G. Mahar ..	Ghurka ..	35	19	14	13	14	95	96	191
	Ranee 4H ..								
H. F. Robinson ..	Ranee 4H ..	32	20	15	13	14	94	96	190
R. G. Shipp, No. 1 ..	Ranee 4H ..	31	18	15	14	14	92	93	185
W. H. Robinson ..	Ranee 4H ..	28	20	14	12	13	87	97	184
E. O. Manuel ..	Ghurka ..	32	17	14	14	14	91	90	181
R. G. Shipp, No. 2 ..	Ghurka ..	29	17	14	14	14	88	93	181
Richard Shipp ..	Free Gallipoli	27	18	13	14	13	85	95	180
T. A. Kendall ..	Ranee 4H ..	24	18	15	13	14	84	91	175
J. M. Hallinan	Ghurka ..	23	19	9	14	13	78	96	174
	Ranee 4H ..								

Mr. H. F. Robinson gained the second award with a well-grown crop of Ranee 4H on heavy red Mallee soil. It was very clean, and the purity of the seed was of a particularly good standard. The heads were not so well filled as in the winning entry, but the crop was very dense, and a fairly good yield was expected. The fallow had been thoroughly worked and sheeped, and the weeds were well controlled. The paddock was not cultivated after harvest, and was sown in mid-June with 65 lb. of seed and 90 lb. of superphosphate per acre.

A dense clean and attractive crop of Ranee 4H was grown also by Mr. R. G. Shipp, and the entry gained the third highest award.

The Fallows.

The bulk of the farmers in this district realize that the maintenance and production of maximum crops are dependent on the preparation of good fallows. Most of the exhibits in the competition were of good standard—all showed a high moisture reserve, and the majority were very clean at the time of inspection.

Some of the heavier land in this locality lends itself to summer fallowing, and many farmers prepare portion of their fallow by this method, generally using the scarifier or undercut to break up the ground during February to April. The system is of advantage in that it enables the winter fallowing to be completed earlier, and permits of an early start being made with the subsequent cultivation. Furthermore, it is useful in that it encourages the weeds to germinate early, thus giving opportunity to clean the land more readily.

In some seasons, extra care must be taken to ensure that the early growth of weeds on the summer-fallowed land is kept down during late autumn, and through the cropping period, otherwise it may become very difficult to cope with. Summer fallowing, however, is not recommended on the lighter soils which are subject to drift.

One of the main essentials in fallowing is to suppress weed growth, which, of course, robs the soil of moisture and plant food, which should be reserved for the benefit of the wheat crop. For best results, the cultivation of the fallows should be undertaken when the weeds are in the young stages. Sheep are a necessary adjunct in weed control, and most farmers in the Kerang district use sheep on their fallows with advantage; at the same time they give the paddocks a reasonable amount of cultivation.

The points awarded to the competition fallows are shown in Table II.

TABLE II.—100 ACRES OF FALLOW—1936.

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation and Seed Bed.	Total.
Maximum Points ..	25	25	25	25	100
E. O. Manuel, No. 3	24	25	25	24	98
H. F. Robinson ..	25	25	24	24	98
E. O. Manuel, No. 2	24	25	24	24	97
R. G. Shipp ..	25	24	24	24	97
E. O. Manuel, No. 1	24	24	24	24	96
G. Mahar ..	24	24	23	23	94
W. H. Robinson ..	24	24	23	23	94
T. A. Kendall ..	24	24	22	23	93
J. M. Hallinan ..	24	24	21	23	92

Mr. E. O. Manuel had prepared a large area of good fallow, and his three entries in the competition were in creditable condition. Two entries (No. 2 and 3) were in the same paddock, which

was comprised of heavy sandy loam, with a strong red sub-soil. It had been sown with oats for hay in the previous year, and was fallowed with a mouldboard plough in July, scarified in September, springtoothed in October, and again in November, and sheeped. The fallow showed a splendid mulch and a level solid and even seed-bed. The No. 3 entry was particularly clean, and this exhibit gained equal highest award.

Mr. H. F. Robinson's entry comprised a crabholey paddock of heavy chocolate loam, which had been very thoroughly prepared. It had been summer fallowed with a sundercut in April, and harrowed at the beginning of June. As it had been broken up early, the ground did not become boggy in the wet winter, and it was possible to keep working it. After a scarifying and harrowing in August, it was worked with a springtooth (with harrows attached) in early September, and again in October.

The fallow was very moist and free from weeds except for a little growth in the bottom of the crabholes, which could not be reached with the wide implements.

Mr. R. G. Shipp's exhibit was also in good order. It consisted of red, loamy land, and was very moist. The entry had been fallowed with a mould board plough early in July, harrowed immediately, and worked with the combine three times during August to November.

Artificial Fertilizer Inspections (*continued from page 129.*)

1.2 and 6.5 lb. Here again the value of the smaller amount is queried and the deduction is that bone and super., which is half bone dust and half super., would provide the need. So that, in this particular section, brands of nitro-super. and bone and super. appear to be sufficient.

Inquiries received during the year deal with the effect of artificial fertilizer, particularly superphosphate, on the germination of seed. In those cases where seed is mixed with superphosphate prior to sowing, or where it is applied in direct contact with seed, for example in some market gardens, the effect is harmful to germination unless some precautions are observed. Governing factors in this regard are (*a*) the variety of seed, (*b*) the length of time the seed will be in contact with the manure, and (*c*) the moisture conditions.

Certain hard seeds, such as clover, are not so readily injured during germination as are the thin shelled types similar to rape and turnip. Seed sown in direct contact with a soluble fertiliser, such as superphosphate, during a dry spell, later will commence germination in intimate contact with a concentrated solution of phosphoric acid. This undoubtedly will result in injury to the stem and root of the sprouting seed.

Where practicable, it is always advisable to mix the manure with soil either before or at the time of sowing the seed. On no account should seed and fertiliser be mixed one day to be sown on the next. Mix sufficient for the day's requirements only.

Botulism in Horses (*continued from page 136.*)

all cases it would be advisable to line the roof immediately above the mangers with galvanized iron to prevent water and dust from falling.

Damaged hay—tops and bases of stacks—decomposing cocky chaff, and other like material should be burned, and manure should not be allowed to collect around the stable yard.

Care should be taken to ensure a pure water supply for all stock.

To correct the depraved appetite acquired by many country horses, a mineral supplement should be made available. With horses the mineral calcium (lime) is the essential one, being deficient in country districts in this State, and the following mixture is recommended for general use :—

Stock salt, 60 parts by weight.

Agricultural lime, 40 parts by weight.

This mixture may be placed in boxes in the stable yard, or may be placed in a small tray alongside each manger. In many cases a change of diet has a beneficial effect on this depravity. Lucerne chaff or hay is excellent.

The investigation which led to the discovery of the poison-producing organism causing the disease of botulism in animals was conducted by Dr. H. R. Seddon, formerly of the Melbourne Veterinary Research Institute, and now Professor of Veterinary Science at the Queensland University. Further knowledge in the field has been brought to light by members of the veterinary staff of the Department and the Veterinary Research Institute.

Dr. Seddon produced an anti-toxin which experimentally gave good results in prevention of the disease, but the irregular incidence of the disease renders the maintenance of a sufficient supply a very difficult matter.

Selected Yeasts for Winemaking

Recent Importations

By D. G. Quinn, Viticulturist, and C. R. Millikan, M.Agr.Sc., Assistant Plant Pathologist.

FOR many years it has been the custom at the Victicultural Station, Rutherglen, to maintain a pure culture of a selected wine yeast for the use of winemakers. Each season this yeast (St. Emilon) has been set to work in a generator containing sterilized wine must, and many wine makers have relied upon obtaining a quart of this yeast as a starter for their own generating plants.

This practice will be continued this season, but it is also proposed to introduce an alternative and less cumbersome method. In future the yeast will be supplied in 4-oz. bottles on agar slants (solidified grape juice). Yeast prepared in this manner is not liable to contamination, is simple to carry, and safe to forward through the post. It can also be held in this state for several months before use, if stored in a cool place.

When multiplying yeast from an agar slant the materials required include—one spirit lamp; one quart bottle of cool grape must, which has been previously sterilized by boiling; and an 8-in. length of No. 10-gauge galvanized fencing wire hammered flat at one end, to act as a spatula. Pass the spatula through the spirit lamp flame several times, then remove the cotton wool plug from the pure culture, and pass the neck of the bottle through the spirit lamp flame several times. Next, by means of the spatula, transfer a piece of the yeast-impregnated agar into the bottle of cool sterilized grape juice, recork, shake well, then substitute a dust cover in place of cork.

The type of bottle in which the yeast culture will be supplied.

The pure culture may be kept for future use in case of emergency. The inoculated bottle of grape juice should be in full fermentation and ready for seeding the winery starter in three to four days time.

The following instructions for the preparation of a continuous starter for small wineries were issued originally in 1927:—

Quantity of Starter Required.—Though much smaller quantities are often used, it would appear that 4½ to 5½ gallons of starter per ton of grapes gives the best results in France. As our grapes yield less juice (about 130 gallons per ton as compared with 180) 3 gallons per ton should suffice. On this basis, a winery turning out 1,000 gallons of wine per day would need 22 to 25 gallons of starter daily.

Continuous Starter Capable of Supplying 25 Gallons per Day.

(1) Take a large puncheon of about 100 gallons capacity. Wash thoroughly and sterilize with live steam—place on stillage on its side, in a clean room, preferably away from the cellar or winery. Fit with a tap.

(2) Crush enough sound, clean, ripe grapes to yield 60 or 70 gallons of juice—heat the strained must to boiling point in a clean boiler (clean, bright kerosene tins will do) or by means of a steam coil.

(3) Pour the boiling must into the steamed puncheon while the latter is still hot. Though not absolutely necessary, it is well to increase the acidity of the must to 8 per mil (tartaric) by adding tartaric acid. The addition of ammonium phosphate at the rate of 4 oz. per 100 gallons is recommended also.

(4) The following day, when the contents have cooled down to about 75° F. add the pure yeast culture.

Needles or fencing wire employed in transferring cultures must first be thoroughly sterilized by heating.

(5) Fermentation soon starts. When well under way, add, in three separate lots so as not to check fermentation too much, potash bisulphite at the rate of 3¼ oz. per 100 gallons.

(6) After three days the starter is ready. Each day 22 or 25 gallons *must be withdrawn* from it and immediately replaced by an equal bulk of must which was heated to boiling point the previous day and which has cooled down and been sulphited at the rate of 3¼ oz. per 100 gallons—this must should also receive ammonium phosphate at the rate of 4 oz. per 100 gallons. The 22 to 25 gallons withdrawn, constitute the yeast which is to be added to the fresh grapes as they go through the crusher. The earlier this addition the better, so as to ensure the cultivated yeast obtaining complete control of the fermentation.

Whether the yeast be required or not it is essential that about 25 gallons be withdrawn every day and replaced by fresh juice. The reason for this is that the gravity of the starter must not be allowed to fall too low. This is important.

For best results it is essential to use yeast which is young and in full activity. A starter, the gravity of which has reduced to 3° or 4° Baumé is of little value. In other words, the starter must not be at a much lower gravity than that of the freshly crushed grapes.

Further information on pure yeasts is contained in a leaflet which is obtainable, free on application, to the Director, Department of Agriculture, Melbourne, C.2.

Recent Importations.

Last year the Department of Agriculture imported two pure cultures from the yeast collection of the University of California. These yeasts were selected by Professor F. T. Bioletti from the Pacottet Laboratory in France, and have been used commercially in France and California for some years. They are known as agglomerating yeasts as they form a heavy granular compact sediment toward the end of the fermentation period. Wines made with these yeasts clear rapidly and the volume of yeast sediment or lees is small, compact, granular, and does not rise so easily during racking, as do the native yeasts which are smaller and not usually of the agglomerating type.

According to Professor W. V. Cruess, both the granular type and the fine grained natural type of true wine yeast do not appear to differ materially in respect to rate of fermentation, alcohol forming power, and effect on flavour of wine. However, the Department conducted several preliminary tests last season to compare the imported yeasts with widely used Australian cultures. The results of these tests are set out in Tables I. and II.

The first batch of yeast generated from a stored culture is comparatively sluggish and so before starting this test our cultures were invigorated by passing them through several preliminary fermentations. The commercial private culture had a very distinct advantage over the other cultures from this point of view, and this may account for the low yield of volatile acid and the rapid fermentation. The "Burgundy" yeast fermented almost as vigorously as the Private Culture, but the St. Emilon fermentation was much less rapid. Both the Private Culture and the Burgundy yeast exhibit some commendable points, but in view of the foregoing it is proposed to repeat these tests before making any recommendations.

THE CULTIVATION OF MUSHROOMS

is a well-established industry in N.S.W.

From Left—(Mr. R. Mas), the Hon. J. M. Dunningham (Minister for Labour and Industry), the Hon. Hugh Main (Minister for Agriculture), Mr. W. H. Childs (Retired Commissioner of Police). In the distance (standing)— Present Commissioner of Police (Mr. W. J. Mackay), Solicitor E. J. McQuiggin, Mrs. Main, and representatives of the Press. At the official opening on Tuesday, July 18th, 1933.

Growers are earning up to £20-0-0 per week.

We have sold 16 tons of mushrooms in five successive months of last year. The growers received 1/9 to 2/6 per lb.

Mushrooms cost 2½d. per lb. to produce.

They will grow in or out of doors, dark place not essential.

Victoria has the most suitable climatic conditions in Australia for mushroom growing.

We offer every assistance.

"Mas" Pure Culture Mushroom Spawn— in cartons sufficient to plant 100 square feet.

Price £1-0-0
Postage 3/6 extra.

Complete Cultural Instructions included.

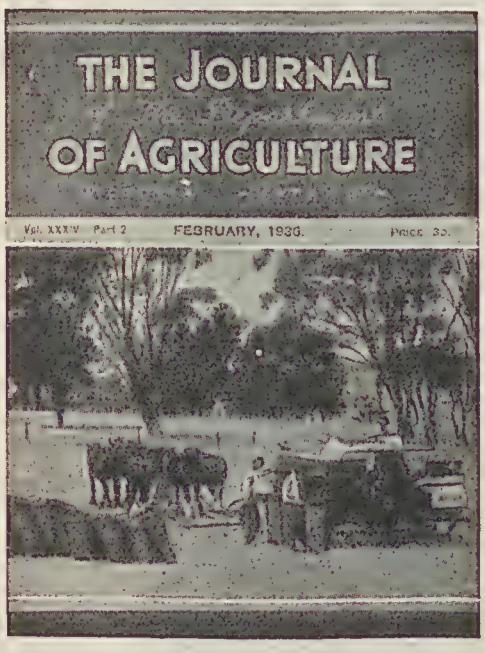
Australian Mushroom Industries, No. 1 WHARF, CIRCULAR QUAY

Address all communications to Box S.S.3680, G.P.O., Sydney.

The Journal of Agriculture

OFFERS EXCEPTIONAL ADVANTAGES

for ADVERTISING



THE JOURNAL OF AGRICULTURE circulates widely throughout the country districts of Victoria and amongst farmers of the Commonwealth, reaching also country bankers, professional and business men, school teachers, &c. It offers exceptional advantages for the advertising of all goods required by the farmer and in the rural home

Only advertisements approved by the Department are accepted for publication in the *Journal*

The *Journal of Agriculture*—the Official Journal of the Department of Agriculture of Victoria—is published monthly and has a GUARANTEED CIRCULATION of

10,000 COPIES MONTHLY

Advertising Rates on Application to the Director, Dept. of Agriculture, Melb., C.2

TABLE I.—TEST ON A LOW GRAVITY STERILIZED MUST, FERMENTED AT THE BIOLOGICAL LABORATORY, BURNLEY, AND ANALYSED BY THE AGRICULTURAL RESEARCH CHEMIST.

—	Percentage Proof Spirit.	Grammes per 100 Cubic Centimetres.			
		Glycerine.	Total Residual Sugar as Dextrose.	Total Acidity as Tartaric.	Volatile Acidity as Acetic.
Original Must ..	0·34	0·14	13.72	0·64	0·003
Private Culture	15·67	0·50	Nil	0·68	0·01
Burgundy ..	15·96	0·52	Nil	0·69	0·03
St. Emilon ..	15·96	0·53	Nil	0·82	0·03

TABLE II.—TEST ON A HIGH GRAVITY SHIRAZ MUST (17° BAUME) TO STUDY FERMENTATIVE ABILITY, CLARIFICATION, AND EFFECT ON FLAVOUR.

—	Percentage Proof Spirit.	Rate of Fermentation.	Condition After Twelve Months.
Champagne ..	30·04	Rapid	Good
Private Culture ..	30·04	Rapid	Good
St. Emilon ..	30·38	Very slow	Good
Burgundy ..	30·04	Rapid	Good

The wines produced in the test shown in Table II. will be exhibited at the Field Day at the Viticultural Station (after vintage), but a supply of 2-oz. bottles has been prepared and may be inspected at the station at any time.

The St. Emilon and Burgundy yeasts have been prepared and are now available on agar slants on application to the Viticulturist, Department of Agriculture, Melbourne, C.2; the Manager, Viticultural Station, Rutherglen; or the Biological Branch, Burnley Gardens, Burnley, E.1.

Dairy Farm Competition *(Continued from page 117.)*

meats and poultry as well as fruits, berries, and vegetables; indeed the quality and variety are surpassed only by the quantity of material prepared for the year's supply. Beautiful gardens, lawns, orchards, hedges, and drives are becoming the usual rather than the excepton. These features suggest a brighter outlook and a more contented rural life. Among the beautiful homes which received full points are those of Messrs. J. A. Ford, A. Crossthwaite, A Barton, and B. Roper of Zone 1; Messrs. A. T. James, A. J. MacDonald, and W. J. O'Brien of Zone 2; Messrs. J. Bullingham and J. B. Watson of Zone 3; Mrs. D. H. Jenkins of Zone 5; Messrs. H. Parish, Callahan, Nicholas, and Dickson of Zone 6; Mr. Senini and Mrs. A. V. Hardie of Zone 8; and Messrs. L. T. Jones and G. Bright of Zone 9.

Mr. H. Parish's home at Winchelsea.

It is not too much to claim that this competition has given the dairy industry a service that can never be fully appreciated. The dairy farmers generally owe a debt to the Central Council of the Victorian United Cow Test Association for its inauguration and to the donors of the prizes for their splendid support.

Orchard and Garden Notes

By Edward E. Pescott, F.L.S.

The Flower Garden.

BULB planting will soon be the order of the day. Some bulbs, such as Lachenalia, Freesia, Muscari, should be planted earlier than others, as they root and, in some cases, flower earlier. Bulbs may be planted as late as May, but early plantings always give better growth and flowers.

All autumn-planted bulbs should have the plant food—old manure or bone-dust for preference—placed below the bulb, so that the roots can easily find it; they are not foragers, and should not have to search for food.

Usually it is advisable to plant the bulbs about 4 inches from the surface. Larger ones may be set an inch or two deeper. Delicate bulbs, such as those of the Hyacinth, should be set in sand. A light layer of sand should be used as a bed, and the bulbs placed thereon and covered with sand before the soil is filled in. Sea sand is preferable for Hyacinths, and indeed, it may be used for any bulb.

Hyacinths succeed well in a sandy ground, but Daffodils and Tulips like a heavy soil, and give their best colours in volcanic country. Ranunculus and Anemones also like a volcanic soil, but they yield good results in a soil well supplied with humus.

The Orchard.

The month of March is the last period when red scale of citrus trees can be effectively dealt with by spraying with white oil. Every effort should now be made with white oil, 1 in 35, to clean the trees of this serious insect pest.

Up to the present, excellent results have been obtained in the current season's campaign of Codling Moth demonstration plots. In one pear plot, the result was as low as one Codling in 1,600 fruits. It is expected that in some of the plots there will be from 96 to 98 per cent. of clean fruit.

Even with these good results, there will still be some larvae left in the orchard, and whether next season's attack is light or severe in any orchard will largely depend on the disposition of the "left over" crop of grubs. Bandages should be closely attended to; bag bands should be cleaned regularly, especially in hot weather; if chemical bands are to be effective, deterioration of the chemicals should be watched for. If the larvae in the bands remain in a healthy condition there is no doubt that the chemicals require renewal. Props must be cleaned of rough bark; the rough bark on the trees should also be cleaned up.

A Daffodil.

The Vegetable Garden.

Celery plants may be set out in rows for a winter crop. They may be planted in a trench, or set on the level to be blanched later. Good soil is essential, for celery is a gross feeder. It is also a lime lover, and in view of the prevalence of celery leaf spot, both soil and plants should be well limed in the early stages of the plant's growth.

Should the brown spots, which are an indication of the disease, appear on the foliage, the plants should be sprayed with the lime sulphur spray, 1 in 50 water.

Crops of broad beans for winter harvesting, and green peas for winter and spring, should now be sown. Generally speaking it is unnecessary to soak the seed, but if the beans show any brown spots on the skin, the seed should be soaked in a very weak solution of bluestone (1 oz. to a gallon of water) for twenty minutes.

Sow the rows of seed in very good soil, leaving at least 12 inches between the rows for cultivation, and lime-dust the plants occasionally as the crop is growing.

Standard Herd Records

For Quarter ended 31st December, 1936

In the following is set out the records of all cows which completed a lactation during the quarter. The number is 223, of which 141 qualified for the certificate. The figure in brackets after the owner's name shows the number of entries.

The amount of butter-fat required for qualification varies according to the age of the animal (up to five years at time of calving), the standard being as follow:—

Junior 2 year old (under 2½ years at time of calving)	230 lb. butter fat.
Senior 2 year old (between 2½ and 3 years at time of calving)	250 lb. butter fat.
Junior 3 year old (between 3 and 3½ years at time of calving)	270 lb. butter fat.
Senior 3 year old (between 3½ and 4 years at time of calving)	290 lb. butter fat.
Junior 4 year old (between 4 and 4½ years at time of calving)	310 lb. butter fat.
Senior 4 year old (between 4½ and 5 years at time of calving)	330 lb. butter fat.
Mature cow 5 years and over	350 lb. butter fat.

(Except where otherwise stated, the period of Test was 273 days.)

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Atkinson, W. K., Swan Hill, Dairy Shorthorn (6).										
Willow Park Camelia 10th	D.S.H.B.	31.12.35	17½	7,688	4·45	341·93	270	Jr. 3	.. ..	Willow Park Silvermine 4th
Willow Park Countess 12th	D.S.H.B.	18.2.36	15½	6,063	4·10	248·63	230	Jr. 2	.. ..	Willow Park Lustre 3rd
Willow Park Fairy 5th	D.S.H.B.	25.2.36	18½	9,783	4·09	400·19	350	Mature	301, 359 ..	Willow Park Eminent
*Willow Park Melba 2nd	D.S.H.B.	20.2.36	4	6,986	3·76	262·66	350	Mature	415, 483, 505, 547, 509, 521	Willow Park Count
Willow Park Moss Rose 3rd	D.S.H.B.	29.2.36	32½	11,001	3·81	419·42	350	Mature	361, 355, 446, 386, 490	Willow Park Reflector
Willow Park Moss Rose 9th	D.S.H.B.	17.2.36	45½	14,018	3·68	515·49	270	Jr. 3	414 ..	Willow Park Reflector
Bassett-Smith, C., Kyabram, Red Poll (3).										
Temperley Lady Gracious		27.2.36	18½	5,397	3·86	208·20	230	Jr. 2	.. ..	Temperley Dairyman
Temperley Pepita		31.1.36	17½	5,922	4·25	251·92	290	Sr. 3	239, 256 ..	Earl of Beaconsfield
Temperley Pip		2.3.36	10½	4,452	4·01	178·39	250	Sr. 2	.. ..	Temperley Jewel Cheer
Bidgood Bros., Staghorn Flats, Jersey (3).										
Staghorn Aldan's Belle 2nd	50636	22.3.36	16½	6,731	5·63	378·80	230	Jr. 2	.. ..	Staghorn Lord Aldan
Staghorn Footprint's Gladness	Vol. 23	23.3.36	12½	5,183	5·63	291·98	250	Sr. 2	.. ..	Staghorn Aldan's Footprint
Wonderful Draconis (imp.)	38612	18.2.36	28½	7,947	5·47	434·43	350	Mature	465 ..	Wonderful Standard
Black, Mrs. A. J., Noorat, Jersey (2).										
Noorat Ballet	41285	16.1.36	18	6,798	5·09	345·76	330	Sr. 4	384 ..	Banyule Airo
Noorat Sunset	41290	11.3.36	20½	7,067	5·53	391·01	330	Sr. 4	307, 417 ..	Banyule Airo
Black, I. S., Noorat, Ayrshire (1).										
Mount Noorat Georgina 4th	28721	23.2.36	18½	6,012	4·65	279·82	230	Jr. 2	.. ..	Scottish Patron of Gowrie Park
Box, Estate of Late Dr. J., Noojee, Jersey (1).										
†Toorongo Molly	C.R.	24.1.36	4	1,170	5·14	60·12	230	Jr. 2	.. ..	Toorongo Master Clement
Box, Estate of Late Dr. J., Whittlesea, Jersey (5).										
Toorongo Epacris	50900	9.3.36	21	6,035	4·72	285·08	290	Sr. 3	286 ..	Toorongo Mercedes King
Toorongo Postmark's Jessica	C.R.	19.1.36	13½	3,926	5·51	216·36	230	Jr. 2	.. ..	Bellefaire Postmaster's Postmark
Toorongo Postmaster's Queen	C.R.	12.1.36	13½	3,641	6·42	233·63	230	Jr. 2	.. ..	Bellefaire Postmaster's Postmark
Tooronga Starlight	C.R.	24.1.36	15½	4,473	5·23	233·93	230	Jr. 2	.. ..	Toorongo Belle's Bonaparte
Xavier Cymbol 2nd	51352	21.3.36	20	5,825	4·29	249·74	270	Jr. 3	270 ..	Grangelea David
Broad, A. A., Sutton Grange, Jersey (2).										
Grangelea Dawn	33037	19.2.36	19½	5,699	6·05	344·73	350	Mature	307, 388, 373	Banyule Macon
Grangelea Rose	33040	15.2.36	30½	9,002	4·93	443·55	350	Mature	411, 567, 501, 547	Banyule Airo
Calf, A. J., Werribee, Jersey (1).										
Illillouette Aristocrat Tangerine	Vol. 23	29.2.36	18	5,211	5·75	299·59	230	Jr. 2	.. ..	Illillouette Carrilla's Aristocrat
Chadderton, J. E., Hamilton, Jersey (3).										
Glen Leigh Dawn 2nd	48264	28.3.36	21	6,369	5·81	370·31	250	Sr. 2	.. ..	Glen Leigh Bounty
Glen Leigh Foxglove	24287	7.3.36	26	7,793	5·04	393·15	350	Mature	308, 462, 433, 432, 431	Gadabout of Daunton
Glen Leigh Lucy 2nd	48268	23.2.36	22½	5,796	5·19	301·00	230	Jr. 2	.. ..	Glen Leigh Bounty

* 253 days in test. † 120 days in test.

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Chitty, C., Kongwak, Jersey (2).										
Ewelme Bronze Beauty ..	48086	15.3.36	20½	4,808	5·46	262·46	270	Jr. 3	270 ..	Ewelme Brown Prince
Ewelme Purity	Vol. 23	9.2.36	10	2,883	5·28	152·23	230	Jr. 2	.. ..	Ewelme Brown Prince
Clarke, A. B., Glenormiston South, Jersey (3).										
Denniston Blue Bird ..	33171	26.2.36	10	5,246	4·92	258·02	350	Mature	295, 365, 288	Cellist of Warenda
Denniston Blue Bird 2nd ..	47874	29.2.36	19½	6,724	5·23	351·76	230	Jr. 2	.. ..	Banyule Lord Silvair
Denniston Princess 2nd ..	43622	13.3.36	22	6,644	5·44	361·75	290	Sr. 3	346 ..	Banyule Airo
Colenso, L. W. R., Alvie, Jersey (6).										
Glenfield Primrose ..	33187	15.1.36	16	5,645	5·16	291·34	350	Mature	268, 220, 400, 334	Glenfield Bosun
Maxon Count's Lady 2nd ..	45058	23.2.36	22	6,270	5·45	341·80	290	Sr. 3	315 ..	Maxon Count Graceful
Normandie Buttercup 6th ..	C.R.	9.2.36	16	3,836	6·00	230·03	230	Jr. 2	.. ..	Normandie Majestic
Normandie Hawthorn 3rd ..	41296	29.2.36	23	6,771	5·18	350·82	330	Sr. 4	284, 327 ..	Peer of Lewisham
Normandie Hawthorn 5th ..	49869	13.3.36	16	5,352	6·30	337·41	270	Jr. 3	232 ..	Peer of Lewisham
Normandie Mayflower 3rd	33193	21.3.36	13	6,095	5·43	330·80	350	Mature	290, 277, 382, 362, 369	Peer of Lewisham
Coughlin, C., Catani, Jersey (5).										
Glady's Park Gaiety Girl 2nd	Vol. 23	4.3.36	15	5,252	6·04	317·17	230	Jr. 2	.. ..	Werribee Bluebell's Masterpiece
Glady's Park Goldmine's Beauty 3rd	48209	8.3.36	16	4,845	5·47	264·93	270	Jr. 3	336 ..	Werribee Bluebell's Masterpiece
Glady's Park Master's Petal	48213	8.3.36	15	5,759	5·53	318·56	270	Jr. 3	325 ..	Werribee Bluebell's Masterpiece
Glady's Park Silver Bell ..	48216	4.3.36	25	8,150	5·35	435·97	290	Sr. 3	315 ..	Banyule Silverstrain
Hazel Dell Beauty ..	21739	31.12.35	6	5,174	5·04	260·77	350	Mature	293, 256 ..	Sir Duke of Woorayl
Coulthard, J. and Sons, Whittlesea, Jersey (4).										
Brookfield Rosalind 2Cth ..	33588	8.3.36	12½	4,584	5·47	250·56	350	Mature	225 ..	Ewell of Brookfield
Jerseyholm Kirsty 28th ..	44484	16.3.36	15	5,253	5·94	312·21	250	Sr. 2	.. ..	Werribee Master Fox
Jubilee Iaconia ..	44531	8.2.36	15½	5,033	6·03	333·57	310	Jr. 4	.. ..	Jubilee Wheatenlight
Strathview Mistletoe 2nd ..	42058	23.3.36	8½	7,214	4·95	357·35	350	Mature	.. ..	Pat of Belgonia
De La Rue, N. C., Weering, Jersey (1).										
Lucerne Vale Master's Queen	40777	23.1.36	14	6,684	5·72	382·48	330	Sr. 4	279, 406 ..	Werribee Fancy Masterpiece
Department of Agriculture, Burnley, Jersey (1).										
Victoria Winsome ..	27218	30.1.36	20	7,946	5·48	435·31	330	Sr. 4	377, 479 ..	Victoria Master Mariner
Department of Agriculture, Werribee, Friesian (5).										
Victoria Double Piebe ..	C.R.	8.2.36	36½	11,085	3·33	368·96	270	Jr. 3	.. ..	Victoria Double Top
Victoria Mavis	5109	23.3.36	13½	8,001	2·86	228·92	270	Jr. 3	290 ..	Dominion Oakdale
Victoria Quilt	3767	29.12.35	28½	11,615	3·79	439·87	350	Mature	328, 480, 553, 507	Victoria Topnote
Victoria Streaky Patch ..	3769	1.2.36	16	10,452	3·74	390·44	350	Mature	399, 438 ..	Dominion Oakdale
Victoria Woodcrest Daisy ..	5112	22.2.36	32½	10,538	3·69	388·68	270	Jr. 3	307 ..	Victoria Joyous Mercedes
Department of Agriculture, Werribee, Red Poll (14).										
Victoria Avecot	3892A	7.2.36	29½	9,138	3·88	354·90	310	Jr. 4	215, 287 ..	Dominion Bright Belgian
Victoria Bell Rose ..	3511AA	20.1.36	22½	8,075	4·21	340·27	310	Jr. 4	253 ..	Victoria Major Royal
*Victoria Campanero ..	..	19.3.36	..	6,447	3·37	216·97	230	Jr. 2	.. ..	Victoria Gallant
Victoria Casino	4046B	20.1.36	16½	7,361	3·87	284·96	290	Sr. 3	230 ..	Victoria Royal Ringer
Victoria Euphasia ..	3605A	16.3.36	16½	7,172	3·92	282·26	270	Jr. 3	211 ..	Dominion Bright Belgian
Victoria Idocrase ..	..	16.2.36	17½	5,673	3·61	204·78	230	Jr. 2	.. ..	Victoria Gallant
Victoria Johanna ..	3912A	25.1.36	27	8,901	4·62	411·35	270	Jr. 3	321 ..	Dominion Bright Belgian
Victoria Kinetica ..	..	21.3.36	21½	6,980	3·96	276·67	230	Jr. 2	.. ..	Victoria Gallant
Victoria Mainfold ..	..	13.3.36	15½	5,810	3·98	231·44	230	Jr. 2	.. ..	Dominion Bright Belgian
Victoria Nicotiana ..	..	5.3.36	21½	6,789	3·54	240·37	230	Jr. 2	.. ..	Dominion Bright Belgian
Victoria Peace	2327A	17.2.36	18½	6,399	4·58	292·98	350	Mature	309, 335, 325, 333, 369, 309	Victoria Bit-o-bacca
Victoria Rebel	2333A	22.2.36	19½	8,789	4·10	360·44	350	Mature	327, 310, 427, 404, 392	Vice Regal
Victoria Waac	3929A	22.2.36	13½	5,936	4·78	283·67	270	Jr. 3	261 ..	Dominion Bright Belgian
Victoria Zephyr	3043A	14.3.36	20	8,285	3·95	327·11	350	Mature	265, 285, 259	Vice Regal
Desmond, J. J., Rochester, Jersey (1).										
Macroom Sweet Nell ..	33277	20.1.36	21½	7,412	5·94	440·61	350	Mature	314, 444, 400, 430	Belgonia Battery
Donelan, Mrs. M. A., Lysterfield, Friesian (3).										
Bolero Diana	3869	4.2.36	26	7,641	3·39	258·91	350	Mature	247, 271, 346, 363	St. Alban's Queen's Korndyke 2nd
†Bolero Petronella's Nella ..	C.R.	29.12.35	4	4,185	3·58	150·00	230	Jr. 2	.. ..	St. Alban's Queen's Korndyke 2nd
Bolero Rosebud Petronella	3359	4.2.36	27	6,842	3·48	238·32	350	Mature	273, 336, 426, 371	St. Alban's Queen's Korndyke 2nd
Dookie Agricultural College, Dookie, Ayrshire (2).										
Dookie Alma	27116	6.3.36	22½	8,925	4·48	399·47	290	Sr. 3	359 ..	Dookie Emblem
Dookie Flora	17776	10.3.36	25½	9,947	4·39	436·41	350	Mature	317, 439, 432, 473, 409, 485	Majestic of Burwood

*268 days in test (sold). † 210 days in test.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Dwyer, G., Balwyn, Jersey (1).										
*Karalee Linda 5th	Vol. 23	28.3.36	4	2,115	6·52	137·91	230	Jr. 2	.. ..	Karalee Linda's Volunteer
Fairchild and Clutterbuck, Tinamba, Jersey (1).										
Vaucluse Madrigal	Vol. 23	16.2.36	16½	4,610	5·98	275·56	250	Sr. 2	.. ..	Vaucluse Concentration
Fixter, W. and Son, Boisdale, Jersey (1).										
Olivedale Dianthus	34006	24.2.36	27½	8,768	5·56	487·56	350	Mature	261, 425, 419, 406	Studleigh Masterpiece
Foster Bros., Boisdale, Jersey (3).										
Boisdale Natty 2nd	47295	15.1.36	18½	3,954	5·18	204·84	230	Jr. 2	.. ..	Boisdale Dazzler
Pine Park Duchess 2nd	41579	21.1.36	4	7,754	5·42	420·55	350	Mature	298, 334, 362	Goronga Farm Jester
Studleigh Master's Kirsty	33077	31.12.35	15	6,647	5·50	365·26	350	Mature	404, 541, 550, 549	Studleigh Masterpiece
Gange, Mrs. E. M., Werribee South, Ayrshire (2).										
Roseleigh Dawn	24308	30.12.35	8	6,578	3·80	249·75	350	Mature	.. ..	Roseleigh Advance
Roseleigh Moonbeam	26716	2.1.36	11	5,240	3·96	207·65	310	Jr. 4	.. ..	Craigmore Lauder
Gay, R. G. and Son, North Devon, Jersey (2).										
Elm Grove Blue Bell	33355	6.3.36	21	6,186	6·27	387·96	350	Mature	314, 325, 422, 404, 360	Elm Grove Royal Lad
Elm Grove Lady Lock 2nd	Vol. 23	13.3.36	20½	5,888	5·32	313·06	230	Jr. 2	.. ..	Goldstar of Melrose
Goddard, J. H., Jumbunna, Ayrshire (2).										
Oakbank Really	15259	9.2.36	22	8,184	4·13	338·27	350	Mature	351, 542 ..	Melville of Oakbank
Donside Rose	23660	5.3.36	18	10,248	4·90	502·39	350	Mature	326 ..	Reality of Olive Dale
Goldschmidt, O., Bacchus Marsh, Jersey (1).										
Crystal Brook Jewel	47817	12.1.36	20	6,350	5·53	351·15	230	Jr. 2	.. ..	Crystal Brook Noble
Gregg, V., Whittlesea, Jersey (2).										
Stoneycroft Roma	42020	9.1.36	21½	6,860	5·55	380·73	350	Mature	347, 370, 387	Kantara Don Juan
Stoneycroft Una 5th	50651	12.3.36	18	5,289	5·01	264·74	290	Sr. 3	289 ..	Toorongo Maori Chief
Handbury, J. E. and Son, No. 1, Toora, Jersey (1).										
Tooravale Lassie 9th	42253	11.3.36	18½	6,168	6·70	413·33	350	Mature	294, 344, 388	Kingsvale Monica 14ths Son
Handley, S. C., Dandenong, Jersey (1).										
Barrowby Rosalind	47135	27.1.36	25	7,431	5·94	441·52	250	Sr. 2	337 ..	Grangelea Progress
Harvey, T., Boisdale, Jersey (9).										
Jerseyholm Blue Bell 8th	25392	2.1.36	18	5,736	5·52	316·74	350	Mature	297, 319, 450, 352, 345	Lord Island Fancy of Brucevale
Jerseyholm Blue Bell 13th	40371	8.2.36	20½	6,588	5·62	370·56	310	Jr. 4	281, 381 ..	Werribee Master Fox
Jerseyholm Blue Bell 14th	40372	9.1.36	23	5,885	5·70	335·72	310	Jr. 4	273, 306 ..	Werribee Master Fox
Jerseyholm Daisy 18th	40375	10.1.36	19½	6,954	5·07	352·91	290	Sr. 3	392 ..	Werribee Master's Expert
Jerseyholm Empress 21st	34063	28.12.35	19	6,369	5·38	342·38	350	Mature	276, 307, 336, 360	Lord Island Fancy of Brucevale
Jerseyholm Empress 30th	40377	21.3.36	17	5,271	5·99	315·53	310	Jr. 4	326, 363 ..	Werribee Master Fox
Jerseyholm Empress 31st	40378	26.1.36	15	5,256	5·16	271·34	310	Jr. 4	302, 337 ..	Werribee Master's Expert
Jerseyholm Empress 32nd	40379	20.3.36	18½	6,656	5·15	342·74	310	Jr. 4	345, 367 ..	Werribee Master Fox
Jerseyholm Kirsty 16th	18736	26.1.36	19½	7,167	5·55	397·61	350	Mature	351, 433, 455, 455, 411, 455, 457	Handsome Boy's 5th of Melrose
Henderson, W., Grasmere, Ayrshire (7).										
Carracoorte Balm 18th	27003	13.1.36	14½	4,802	4·92	236·24	290	Sr. 3	305	Gerty's Producer of Carracoorte
Carracoorte Bellona 18th	28164	23.2.36	19	5,255	3·96	208·15	310	Jr. 4	241 ..	Carracoorte Panic
†Carracoorte Blanche 9th	25903	23.1.36	4	3,881	5·35	207·74	350	Mature	286, 412 ..	Carracoorte Pilot
‡Carracoorte Iris 17th	24695	3.2.36	..	3,570	4·41	157·41	330	Sr. 4	245, 269 ..	Carracoorte Maiden's Laddie
Carracoorte Iris 18th	24696	15.3.36	22½	7,128	4·1[illegible]	292·81	330	Sr. 4	239, 410 ..	Carracoorte Maiden's Laddie
Carracoorte Palm 2nd	23552	22.3.36	19½	6,258	4·18	261·31	350	Mature	312, 287, 314, 409	Gerty's Producer of Carracoorte
Carracoorte Palm 4th	28176	20.1.36	19	3,696	4·41	162·85	230	Jr. 2	.. ..	Grand View Bernie
Herd, L. J., Heidelberg, Jersey (2).										
Banyarra Soprano	C.R.	6.3.36	16	4,683	5·06	236·77	230	Jr. 2	.. ..	Banyarra Velvetation
Banyule Molly 31st	25464	16.3.36	N.o.c.	7,238	4·87	352·42	350	Mature	374, 357, 317	Concentration of Banyule
Hore, E., Horfield, Jersey (2).										
Taranah Roseleaf 4th	27589	15.2.36	25	8,781	5·12	449·57	350	Mature	445 ..	Taranah Submarine
Troed-yr-Rhiw Dilly's 2nd	50328	27.2.36	14	7,485	5·60	419·37	290	Sr. 3	373 ..	Glen Iris Montrose Duke
Hore, M. T., Horfield Friesian (1).										
Elmar Holme Patch	C.R.	1.1.36	22	9,554	3·98	379·84	270	Jr. 3	350 ..	Greenvale Oakwood Posch
Huffer, J. A., Gormandale, Jersey (2).										
Glen Valley Sand Daisy 2nd	40005	14.3.36	27	7,289	5·36	390·67	310	Jr. 4	270 ..	Glen Valley Patrol
Melrose Handsome Girl 14th	25697	28.12.35	20	5,964	5·94	354·02	350	Mature	217, 381, 400, 397, 398, 333, 339	Sunset of Melrose

* 210 days in test. † 253 days in test. ‡ 240 days in test (sold.)

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Hurrey, W. H., Koonwarra, Jersey (1).										
Kooreena Lady 5th ..	49034	6.2.36	20	7,052	5·11	360·35	230	Jr. 2	.. ..	Kooreena Carrie 3rd's Delegate
Hutchison, H. McD., Yan Yean, Jersey (1).										
Melrose Graceful Duchess 47th	38571	14.2.36	22	6,537	5·56	363·57	350	Mature	272, 368, 467	Melrose Clementine 2nd's Masterpiece
King, H. W., Warragul, Jersey (1).										
Karoola Mavis	33440	5.3.36	32	8,499	5·26	447·32	350	Mature	326, 394, 397, 528	Glenallen Mariposa
Knowles, T., Dandenong, Ayrshire (2).										
Dandy Mabel	24782	1.2.36	13	6,741	4·40	296·39	350	Mature	303, 326 ..	Beleura Sarchedon
Dandy Twinkle	28250	14.1.36	21	6,273	4·46	279·86	230	Jr. 2	.. ..	Maesgwyn Prince Alfred (Imp).
Longerenong Agricultural College, Dooen, Ayrshire (1).										
*Longerenong Laurel 2nd ..	26559	2.1.36	4	3,270	4·51	147·48	310	Jr. 4	204 ..	Longerenong Baron
Lyon, C. G., Heidelberg, Jersey (9).										
Banyule Ettie 17th ..	38795	15.2.36	21	6,105	5·18	316·14	290	Sr. 3	.. ..	Banyule Lord Silvair
Banyule Molly 47th ..	47120	13.3.36	N.O.C.	5,565	5·32	295·88	230	Jr. 2	.. ..	Banyule Pitman
Banyule Silvermine 74th ..	34105	30.12.35	24½	8,010	4·80	384·20	350	Mature	302, 330, 472	Superstrain of Banyule
Banyule Silvermine 83rd ..	38805	13.2.36	27½	8,772	4·82	422·73	270	Jr. 3	380 ..	Banyule Lord Silvair
Banyule Silvermine 86th ...	42888	19.1.36	18½	6,650	6·16	409·47	250	Sr. 2	.. ..	Banyule Triplane
Banyule Silvermine 88th ..	42890	21.2.36	27	7,524	4·77	358·62	250	Sr. 2	.. ..	Oxford Beau's Pretty Oxford (Imp.)
Banyule Silvermine 91st ..	42893	13.2.36	21	6,062	5·08	308·17	230	Jr. 2	.. ..	Oxford Beau's Pretty Oxford (Imp.)
Banyule Silvermine 93rd ..	47127	25.3.36	18½	5,307	4·79	254·32	230	Jr. 2	.. ..	Banyule Weft
Iceholme Lady	37787	19.2.36	27½	6,744	5·19	349·87	310	Jr. 4	277, 343 ..	Retford Mayflower's King
Lyon, W. H. Sale, Jersey (2).										
Avon Blanche 20th ..	47066	2.1.36	12	5,352	6·05	324·00	270	Jr. 3	265 ..	Avon Lassie Fowler's Count
Avon Little Nell 9th ..	C.R.	20.2.36	19½	6,276	5·90	370·46	290	Sr. 3	.. ..	Avon Lassie Fowler's Count
McCosh, S. J., Wandin North, Jersey (3).										
Goronga Farm Daffoplane ..	38094	11.3.36	19	5,697	5·54	315·62	350	Mature	240, 192, 289, 375	Banyule Triplane
Heathermont Countess ..	48639	2.2.36	16	3,974	5·33	211·93	230	Jr. 2	.. ..	Woodside Mabel's Volunteer
Kara Tex	34169	1.3.36	26	7,344	5·63	413·73	350	Mature	310, 307, 231	Karalee Volunteer
McDougall, J., Byaduk, Jersey (3).										
Park View Cream Rose ..	Vol. 23	8.2.36	16	5,093	5·47	278·59	250	Sr. 2	.. ..	Grangelea Royal
Park View Lady May ..	41514	1.3.36	17½	6,251	5·50	343·78	330	Sr. 4	280, 310 ..	Grangelea Royal
Park View Lena 2nd ..	45649	14.3.36	14½	5,399	6·53	352·43	270	Jr. 3	347 ..	Grangelea Royal
McNabb, G. and Son, Irrewillipe East, Jersey (2).										
Maxon Count's Pansy ..	40933	3.3.36	16	4,677	6·23	291·37	330	Sr. 4	286, 384, 365	Maxon Count Graceful
Maxon Count's Pearl ..	45059	27.3.36	14½	5,192	5·31	275·51	290	Sr. 3	270, 342 ..	Maxon Count Graceful
Maher, R. H., Tongala, Jersey (1).										
Rosemont Laura 7th ..	50461	29.12.35	13	4,067	6·08	247·08	250	Sr. 2	.. ..	Rosemont Laddie Fowler 3rd
Meaklim Bros., Mooroopna, Dairy Shorthorn (6).										
Drumneil Damsel ..	D.S.H.B.	28.12.35	14½	7,415	4·29	318·01	310	Jr. 4	.. ..	Willow Park Reformer
Drumneil Fairy ..	D.S.H.B.	17.3.36	24	10,464	4·13	432·34	350	Mature	410 ..	Bounty of Darbalara
Drumneil Fairy 4th ..	D.S.H.B.	3.3.36	29½	9,782	3·60	351·90	230	Jr. 2	.. ..	Willow Park Reformer
Drumneil Lilly	D.S.H.B.	15.2.36	33½	10,083	4·20	423·40	270	Jr. 3	.. ..	Willow Park Reformer
Drumneil Nellie 2nd ..	D.S.H.B.	21.3.36	19	8,171	4·13	337·69	290	Sr. 3	.. ..	Drumneil Bounty 2nd
Drumneil Pearl	D.S.H.B.	5.2.36	28½	7,629	3·69	281·60	230	Jr. 2	.. ..	Willow Park Reformer
Moore J. and Co., Yarram, Jersey (4).										
Tooloonook Peach 3rd ..	C.R.	31.1.36	14	3,937	5·22	205·65	350	Mature	306, 314 ..	Heroic of Somerville
Tooloonook Plumbago 4th ..	42249	8.3.36	21	6,296	4·57	287·79	350	Mature	263, 311, 348	Somerville Beauty 4th's Command
Tooloonook Polygold ..	C.R.	23.2.36	29	5,635	4·92	277·42	270	Jr. 3	305 ..	Tooloonook Olianthus Hero
Tooloonook Sainfoin 3rd ..	50888	18.3.36	17	5,040	4·92	247·76	270	Jr. 3	245 ..	Heroic of Somerville
Nancarrow Bros., Kerang, Jersey (3).										
Pine Ridge Countess ..	50167	29.12.35	16	5,053	6·11	303·91	250	Sr. 2	281 ..	Bellaire Count
Kyora Dream Girl ..	29160	9.3.36	24	8,957	5·57	499·17	350	Mature	374, 416, 467, 459, 514, 517	Perree's Duke
Pine Ridge Dream Girl ..	Vol. 23	21.2.36	22	6,156	5·32	327·34	230	Jr. 2	.. ..	Woodside Reprieve Volunteer
Nicholas, A. M., Sherbrooke, Jersey (1).										
Selsey Wiegelia	Vol. 23	1.1.36	12	4,532	6·51	294·86	230	Jr. 2	.. ..	Brampton Great Boy (Imp.)
Overend, Mrs. A. C., Sale, Jersey (7).										
Bon Accord Belle 3rd ..	47293	7.2.36	12	4,086	6·33	258·74	290	Sr. 3	213 ..	Bon Accord John
Bon Accord Bright Bertha ..	47299	28.12.35	14	3,837	5·98	229·41	250	Sr. 2	251 ..	Bon Accord John
Bon Accord Bright Spark ..	38949	2.2.36	11	4,508	4·95	222·99	330	Sr. 4	196, 361, 343	Bon Accord John
Bon Accord Brilliant Gem ..	38008	16.2.36	19½	7,025	5·25	368·78	350	Mature	262, 411, 230, 384, 367	Bon Accord David

* 150 days in test.

STANDARD HERD RECORDS—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Overend, Mrs. A. C. Sale, Jersey.—*continued.*										
Bon Accord Island Gem ..	25576	23.3.36	14	5,598	5·27	295·25	350	Mature	271, 270, 367, 427, 227, 481, 383	Lord Island Fancy of Bruce-vale
Bon Accord Madam Pompadour 3rd	38950	13.2.36	20½	5,930	6·31	278·00	330	Sr. 4	201, 348, 366	Bon Accord John
Bon Accord Mascotte 3rd ..	47301	5.1.36	14	5,086	5·33	271·06	270	Jr. 3	.. ..	Bon Accord John
Payne, A. E. T., Lilydale, Guernsey (5).										
Yarraview Charm ..	5163	21.3.36	19	6,044	5·38	324·94	230	Jr. 2	.. ..	Camilla's Majestic of Maple Lodge (Imp.)
*Yarraview Citron ..	3550	8.3.36	..	7,145	5·04	360·15	290	Sr. 3	345 ..	Woodland Fluer-de-lys
Yarraview Dulcie 2nd ..	3555	9.1.36	15	6,128	4·58	280·81	310	Jr. 4	.. ..	Camilla's Majestic of Maple Lodge (Imp.)
Yarraview Felicia ..	3556	4.3.36	15½	8,513	6·23	530·18	310	Jr. 4	.. ..	Woodland Fluer-de-Lys
Yarraview Janet	3559	20.1.36	20	7,794	5·32	414·81	350	Mature	.. ..	Yarraview Hector
Pearson, J., Nerrena East, Jersey (2).										
Warrawee Iris 3rd ..	51132	24.1.36	15½	6,270	5·23	327·64	270	Jr. 3	436 ..	Woondoon Duke's Pride
Welbourne Bright Light ..	38191	3.2.36	13	5,276	5·63	297·09	350	Mature	345, 447 ..	Studleigh Progress
Phillips, J. H., Speewa, Jersey (1).										
Ryelands Morning Glory ..	Vol. 23	27.12.35	12½	4,601	5·40	248·24	230	Jr. 2	.. ..	Orphanage Zaffarine's Prince
Powell, T. S., Mansfield, Jersey (1).										
Mornmoot Myth	33141	24.3.36	20½	9,459	5·19	490·61	350	Mature	436 ..	Choirmaster of Banyule
Raleigh, Miss H. E., Pakenham Upper, Jersey (3).										
Burnside Gavotte ..	24558	14.2.36	11½	4,834	5·24	253·12	350	Mature	341, 246, 284, 301, 349, 314	Retford Lord Twylish
Goronga Farm Daffodil Octavia	44162	19.2.36	20½	5,703	4·86	277·15	310	Jr. 4	320, 334 ..	Banyule Air Gun
Goronga Farm Jester's Pearl	Vol. 23	5.3.36	24	6,222	5·09	316·91	230	Jr. 2	.. ..	Goronga Farm Jester
Read, J. D., Springhurst, Jersey (4).										
Springhurst Blonde Medick	46178	24.3.36	21	7,116	5·62	399·92	290	Sr. 3	305, 394 ..	Bellefaire Seaborn Successor
Springhurst Coronation Tecoma	50626	28.3.36	17½	6,041	5·13	309·86	230	Jr. 2	.. ..	Springhurst Design's Analyst
Springhurst Romneya 3rd ..	29339	20.3.36	22½	6,924	6·17	427·31	350	Mature	442, 517, 399, 453, 518	Starbright's Prince of Glen Iris
Springhurst Sybil Gladiolus	46190	25.3.36	18	6,394	6·07	387·87	270	Jr. 3	272 ..	Bellefaire Seaborn Successor
Rentsch, A., Tabor, Illawarra Shorthorn (1).										
Wattle Bank Wattle Blossom ..		11.2.36	22	5,639	4·75	267·75	250	Sr. 2	.. ..	Lemon Grove Empress Kitchener
Ronalds, O., Jindivick, Jersey (1).										
†Jindivick Northern Duchess	44515	17.2.36	..	6,105	6·03	368·01	310	Jr. 4	431, 551 ..	Somerville Master Babs
Salesian College, Sunbury, Ayrshire (1).										
Rupertswood Rosella ..	22060	6.1.36	16	7,058	4·25	300·03	350	Mature	320, 235, 308, 308	Rupertswood Lancer
Salesian College, Sunbury, Friesian (2).										
Elgin Glen Colsegis ..	C.R.	1.1.36	18½	5,753	2·97	170·61	230	Jr. 2	.. ..	Alne Holme Echo Segis
Enterprise Longbeach Segis	4531	8.1.36	15½	8,060	3·76	303·28	310	Jr. 4	228 ..	Graindale Longbeach Hero
Sebire, T., Wandin Yallock, Jersey (1).										
Wandin Morna's Satisfaction	42414	18.2.36	8½	5,063	5·04	255·11	330	Sr. 4	.. ..	St. Alban's Lilac's Superior
Shearman, A. and W., Darnum, Jersey (1).										
Darnum Park Molly Ha Ha	Vol. 23	9.3.36	25½	7,155	4·84	346·28	290	Sr. 3	.. ..	Master Clement of Glen Iris
Smith, E. L. and Sons, Woodend, Friesian (4).										
Homeleigh Adrienne ..	4626	12.1.36	11	6,791	3·35	227·42	250	Sr. 2	.. ..	Homeleigh Oakfield
Homeleigh Corinna ..	4628	29.2.36	32	7,457	3·47	259·10	250	Sr. 2	.. ..	Homeleigh Oakfield
Homeleigh Navarre ..	4632	10.1.36	17	6,764	3·40	229·96	270	Jr. 3	317 ..	Longbeach Netherland King 2nd
‡Homeleigh Rosmelba ..	4635	6.1.36	4	4,875	3·38	164·67	230	Jr. 2	.. ..	Homeleigh Oakfield
Sterling, H. V., Meade, Jersey (1).										
Banyule Molly 26th ..	24459	20.1.36	29	8,914	5·39	480·61	350	Mature	451, 451, 456	Wotton Airman (Imp.)
Stoney, W. B., Drouin West, Jersey (3).										
Melview Fuchsia 5th ..	45128	20.2.36	16½	4,974	5·46	271·76	310	Jr. 4	260, 332 ..	Handsome Boy 12th of Jerseyholm
Tarago Foxglove 2nd ..	50769	22.2.36	21½	5,813	4·18	243·00	290	Sr. 3	233 ..	King's Vale Dolly 4th's Son
Tarago Mystery 3rd ..	Vol. 23	17.3.36	14	4,232	5·68	240·26	250	Sr. 2	.. ..	Edmonton Island Chief

* 253 days in test. † 210 days in test (herd withdrawn). ‡ 210 days in test.

Standard Herd Records—*continued.*

Name of Cow.	Herd Book No.	Date of Calving.	Milk last day of Test. lb.	Milk. lb.	Average Test.	Butter Fat. lb.	Standard required.	Class.	Previous Yields of Butter Fat.	Sire.
Taylor, C. G., Highton, Jersey (1)										
Thornbury Grange Elaine 2nd	Vol. 23	14.1.36	19½	5,307	5·64	299·09	230	Jr. 2	.. ..	Somerville Dignity
Thomas and Taylor, Hamilton, Ayrshire (5).										
Carracoorte Betsy 22nd ..	24674	13.3.36	25	7,554	4·69	354·56	350	Mature	313, 389 ..	Blue Bell's Pride of Glencourt
Carracoorte Bonnie 3rd ..	24677	10.1.36	9	6,164	5·78	356·06	350	Mature	289, 374, 461	Carracoorte Malden's Laddie
Carracoorte Bonnie 4th ..	24678	1.2.36	27	7,596	4·08	310·12	350	Mature	326, 360 ..	Blue Bell's Pride of Glencourt
Carracoorte Bunty 16th ..	24684	8.1.36	20	6,293	5·60	352·72	350	Mature	295, 384 ..	Carracoorte Pilot
Carracoorte Fennella 20th ..	27010	19.2.36	25	6,324	4·46	281·96	270	Jr. 3	286 ..	Carracoorte Panic
Tomasetti, B. G., Drouin West, Ayrshire (5).										
Glencorren Marigold ..	27245	31.1.36	26	7,409	3·84	284·52	270	Jr. 3	337 ..	Scotswood Flashlight
Glencorren Mary	Vol. 24	29.2.36	17	4,004	4·37	175·07	230	Jr. 2	.. ..	Gowrie Park Scottish Emblem
Glencorren Model ..	C.R.	31.1.36	23	5,493	4·04	222·16	250	Sr. 2	.. ..	Scotswood Michael 2nd
Glencorren Valmai ..	C.R.	23.2.36	20	5,073	4·62	234·41	230	Jr. 2	.. ..	Scotswood Michael 2nd
Glencorren Violet ..	28447	5.1.36	25	5,889	4·30	253·11	250	Sr. 2	.. ..	Scotswood Michael 2nd
Walker, C. S., Swan Hill, Friesian (1).										
Warwick Maggie Woodcrest	C.R.	31.12.35	24	8,478	3·12	264·51	250	Sr. 2	.. ..	Greenvale Woodcrest Oakwood 2nd
Walker, C. S., Swan Hill, Jersey (2).										
Warwick Polly	38488	29.2.36	13	5,295	5·51	291·72	350	Mature	142, 355, 308, 352	Chevrolet of Banyule
Warwick Princess Iris ..	C.R.	13.1.36	17½	6,242	4·49	280·20	270	Jr. 3	273 ..	Preston Star King
Wallace, A., Kennington, Ayrshire (1).										
*Spring Dale Dawn ..	15623	4.1.36	4	6,330	4·04	255·57	350	Mature	293, 304, 333, 336	Sunrise of Ellerslie
Wallace, A., Kennington, Jersey (1).										
Grovelea Dawn Maid ..	Vol. 23	18.2.36	11	3,833	5·25	201·33	230	Jr. 2	.. ..	Mornmoot Monarch 2nd
Warragul High School, Warragul, Red Poll (5).										
Gipps Christina	2874A	19.3.36	22½	6,423	4·67	299·68	350	Mature	250, 220, 358	Woodburn Laureate
Gipps Gulnare	3656A	17.2.36	8	4,365	3·77	164·39	270	Jr. 3	281 ..	Gipps Byron
Gipps Julia	3658A	25.2.36	17½	4,976	4·02	199·80	270	Jr. 3	284 ..	Gipps Byron
Gipps Thera	2188A	16.1.36	19½	6,765	4·27	289·19	350	Mature	262, 211, 255, 302	Woodburn Laureate
Gipps Ultima	3662A	14.3.36	9	5,085	3·96	201·21	250	Sr. 2	248 ..	Gipps Byron
West, J. C., Notting Hill, Illawarra Shorthorn (2).										
Grange Lea Clara	8195	1.1.36	23½	8,694	4·49	390·70	330	Sr. 4	278, 363 ..	Magic of Alne Bank
Grange Lea Pearl ..	8198	11.3.36	33	9,800	3·34	424·89	350	Mature	237, 307 ..	Greyleigh Archer
Williams, F. A., Bamawm, Extension Jersey (1).										
Bamawm Princess Pamella	47103	1.1.36	13	6,766	5·97	404·10	270	Jr. 3	386 ..	Bamawm Leon
Wood, J. V. M., Heidelberg, Jersey (5).										
Clarendon Eyre Belladonna 2nd	39243	21.3.36	26	8,237	5·71	470·21	350	Mature	485, 508, 425	Clarendon Eyre Happy Husband
Clarendon Eyre La Mascotte 10th	Vol. 23	21.2.36	24½	6,804	5·18	352·40	230	Jr. 2	.. ..	Clarendon Eyre Oxford Premier
Clarendon Eyre Sweet Lavender 2nd	43395	16.1.36	24½	7,187	5·69	408·77	270	Jr. 3	313 ..	Clarendon Eyre Eminent's Bing Boy
Clarendon Eyre Tangerine 8th	47636	11.1.36	26½	7,883	4·70	370·24	270	Jr. 3	308 ..	Victorious Pioneer
Lightsome Bart (Imp.) ..	33957	13.1.36	26½	8,529	4·88	416·10	350	Mature	295, 418, 445, 394	Lily Light's Oxford

* 240 days in test.

ONE THING YOU CAN DO

You cannot tell exactly what the future holds, but you can be prepared to take advantage of your opportunity when it does come. In other words, you should have money at call in the State Savings Bank.

Small deposits—made at regular intervals—soon grow into a substantial sum at the—

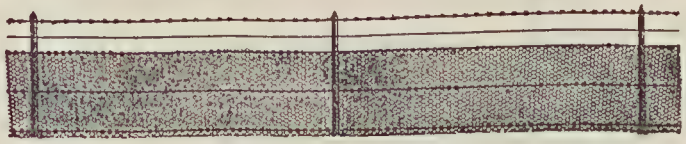
STATE SAVINGS BANK OF VICTORIA

213 Branches, 371 Agencies
Head Office: Elizabeth St., Melbourne.
J. THORNTON JONES, General Manager.

For Australian Farmers . . !

"WARATAH" BRAND

FENCING PRODUCTS



"WARATAH" WIRE NETTING, FENCING WIRE,
STAR STEEL FENCE POSTS, HINGED-JOINT FENCE, ETC.

100% Australian from the Ore to the Fence.
Rylands stand behind their Products—Quality equal to any in the World.

Made by **RYLANDS BROS. (Aust.) LTD.** Newcastle (N.S.W.)

Head Office: 422 Little Collins Street, Melbourne

FRIESIAN BULL CALVES FOR SALE

The Victoria Stud, State Research Farm, Werribee

Herd Tested - - Tuberculin Tested
Registered

Sons or grandsons of the

Herd Sire

VICTORIA JOYOUS MERCEDES (985):

Champion, Melbourne Royal Show 1931 and 1933

Reserve Champion 1928, 1929, and 1934.

Victoria Joyous Mercedes

Dam:
Victoria Joybell, produced 15,387 lb. milk, 3·67 % test, 565 lb. butter-fat in 273 days, twice-a-day milking.

Daughters:
His eight (8) first-calf daughters have averaged 9,930 lb. milk, 3·73 % test, 370 lb. butter-fat in 273 days on first lactations.

INSPECTION
--INVITED--

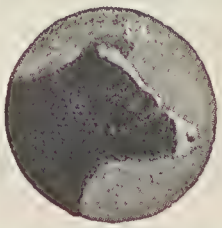
1. VICTORIA CHOIR BOY (C.R.) *Born 13th June, 1935*
Sire: Victoria Joyous Mercedes (985) *Dam:* Victoria Chorus Girl (3759)
Victoria Chorus Girl produced 510 lb. butter-fat in 273 days as Sr. 3 year old.
Price: **20 guineas** f.o.r. Werribee

2. VICTORIA DUCE (Vol. 14) *Born 20th December, 1935*
Sire: Victoria Double Top (1354) *Dam:* Victoria Ilkedes (3763)
Victoria Ilkedes has produced 490 lb. butter-fat as Jr. 4 year old in 273 days.
Price: **17 guineas** f.o.r. Werribee

3. VICTORIA MIKADO (C.R.) *Born 1st February, 1936*
Sire: Victoria Joyous Mercedes (985) *Dam:* Victoria Streaky Patch (3769)
Victoria Streaky Patch produced 438 lb. butter-fat in 273 days as Sr. 3.
Price: **16 guineas** f.o.r. Werribee

4. VICTORIA SINGING LAD (C.R.) *Born 10th October, 1936*
Sire: Rupertswood Inka Jo. (Vol. 13) *Dam:* Victoria Songstress (3768)
Victoria Songstress produced 468 lb. butter-fat in 273 days.
Price: **17 guineas** f.o.r. Werribee

For further particulars apply to
The Director of Agriculture, Melbourne,
or The Manager, State Research Farm, Werribee.



Stud Breeders' CARDS

Leading Red Polls

"GIPPS" RED POLLS

The well-established herd of Red Poll Cattle at Warragul High School.

Young Bulls, Heifers, and Tested Females for Sale.

INSPECTION CORDIALLY INVITED.

Inquiries to the Head Master,

WARRAGUL HIGH SCHOOL

Advertising Rates

STUD BREEDERS' CARDS

Advertisements for this section accepted at following rates :—

12 months - **15/-** per insertion
6 months - **17/6** per insertion
1 to 3 months - **£1** per insertion

For further particulars write to

Director, Department of Agriculture
MELBOURNE, C.2.

This Journal

offers exceptional advantages

for Advertising

Circulates throughout the **Country Districts of Victoria** and amongst **Farmers of the Commonwealth**, reaching also country professional men, tradesmen, schoolmasters, teachers, and the like.

Exceptionally satisfactory results have followed the advertising of Stud Stock in this Journal.

Rates on application to the Official Canvasser

DEPARTMENT OF AGRICULTURE, MELBOURNE, C.2

Is a simple arrangement that multiplies the power at the handle 260 times—handy to use, easy to move, quickly rigged, and works in roughest country. Standard equipment pulls trees and stumps from 1½ acres without changing anchor. Many other time- and labour-saving features. Catalogue with pleasure.

TREWHELLA BROS. PTY. LTD., TRENTHAM

Easter Fare Bargains that will please you . . !

Return Tickets at Single Fare Plus One-third.

On issue from March 22 to 30 inclusive for travel Anywhere to Anywhere on the Victorian Railways System (Suburban journeys excepted) . . .

Tickets available by all trains and for return until April 30. . .

Return Tickets at Single Fare.

On issue March 24 from Melbourne to the country and from the country to Melbourne; also, on March 25 by late-night special trains from Melbourne to Ballarat, Bendigo, Colac, and Queenscliff, Traralgon, Wonthaggi, and Leongatha . . .

Tickets available for return until April 30.

Excursion tickets issued on March 24 not available for travel by "The Sydney Limited." . . .

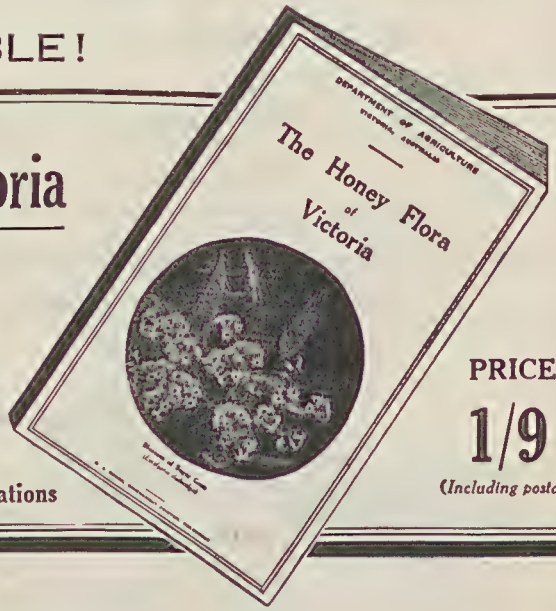
FOR FURTHER DETAILS OF THESE ATTRACTIVE FARES - - -

Consult your local Stationmaster, or the Victorian Government Tourist Bureau, Queen's Walk, Melbourne (Branch Office, Spencer Street Station). Tel. Cent. 2042.

NOW AVAILABLE!

The Honey Flora of Victoria

A THIRD EDITION of "*The Honey Flora of Victoria*," a comprehensive book dealing with the identification and honey-producing qualities of the Eucalypts, Banksias (Honeysuckles), Bottlebrushes, &c., has been published by the Department of Agriculture.



The publication contains 140 pages and 100 illustrations

PRICE 1/9 (*Including postage*)

Obtainable from . .
The Director, Department of Agriculture, Melbourne, C.2

For Stock and Poultry....
Use
COCKBILL'S

MEAT MEAL
BONE MEAL
BONE GRIT
And Obtain Best Results.

We also supply
Super Quality Neatsfoot Oil.

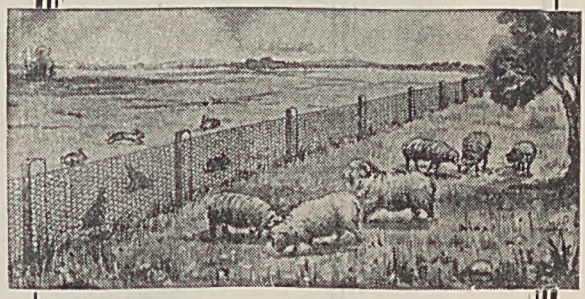
J. COCKBILL
407 POST OFFICE PLACE, MELBOURNE, C.1.
TELEPHONE, CENTRAL 2098.

POULTRY
FOR
SETTLERS

WHITE LEGHORNS
and AUSTRALORPS

For prices and particulars apply to
THE MANAGER,
RESEARCH FARM,
WERRIBEE.

100%
Australian Made
LYSAGHT'S
Fencing and
Other Wires,
Wire Netting,
Zinc Oxide.



Our Netting and Other Products are known through the Commonwealth as of the highest standard. Obtainable from all leading Merchants and Storekeepers.

LYSAGHT'S AUSTRALIAN MADE WIRE NETTING PROOF SYDNEY N.S.W. REG. TRADE MARK

Look for our marker in every roll of netting.

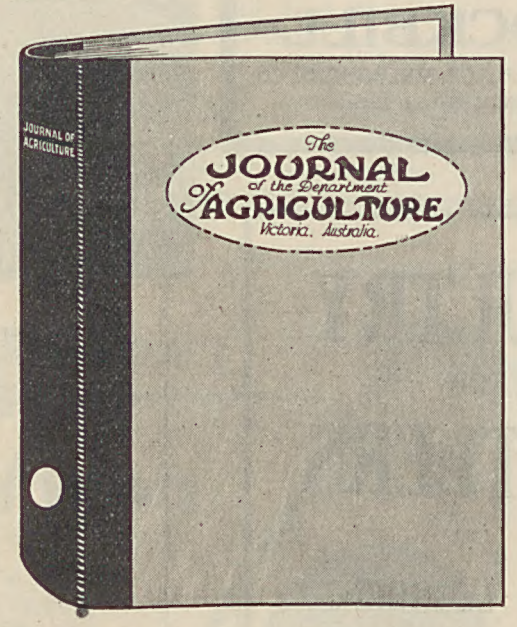
Manufactured by
Lysaght Bros. & Co. Ltd.

Head Office: 17-19 Bridge Street, Sydney
Works: Parramatta River
Agents for Victoria: Gibbs, Bright & Co., 34 Queen Street, Melbourne

DEPARTMENT OF AGRICULTURE

Keep your Journals Together . . .

A HANDSOME gold-embossed Cover in which monthly copies of the Journal of Agriculture are easily bound may be obtained from the Department of Agriculture.



Made to hold 12 monthly copies and the annual index, this Cover will keep your Journals clean and in proper sequence and insure you easy and immediate access whenever reference is necessary.

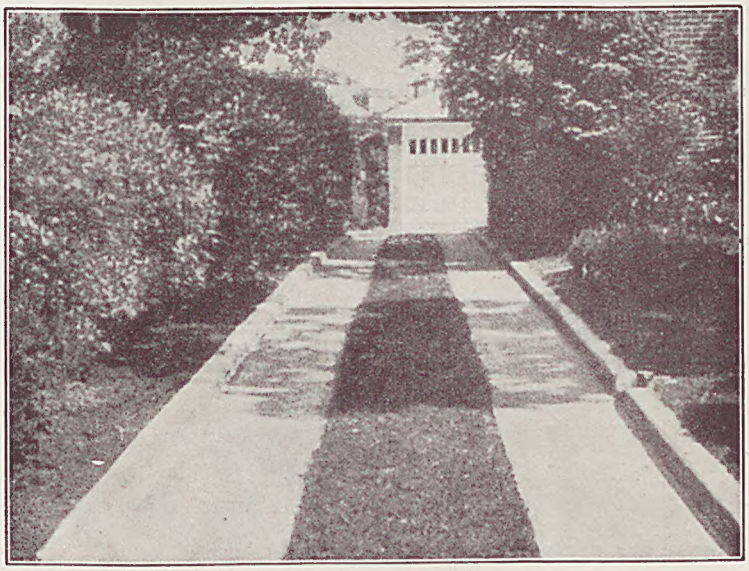
Price 1s. 6d. Post Free

Obtainable from the Director, Department of Agriculture

H. J. Green, Government Printer, Melbourne.

CONCRETE

For Permanent Satisfaction



Concrete Driveway

USE

"ARC" Brand GEELONG Cement

Write to us for Free Information *re* Uses of Cement on the Farm.

AUSTRALIAN CEMENT LIMITED

TEMPLE COURT, 422 COLLINS ST., MELBOURNE, C.1

Telephone : Central 1773 (4 lines)

Every Farmer must Avoid

LOSS OF POWER — PACKED SOIL — LOSS OF TIME

LOSS OF POWER means waste of Fuel. WHEEL SLIPPAGE IS COSTLY.

PACKED SOIL means Loss of Crop. Every Acre of Packed Soil means a few Less bags to the Yield.

LOSS OF TIME means a Tractor in the shed, when it should be in the paddock.

McGREGOR

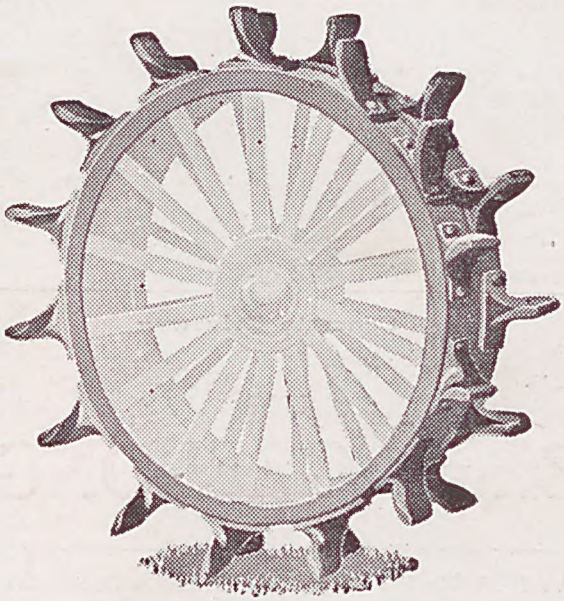
Self Cleansing-Creeping-Wheel-offset

TRACTOR GRIPS

Have for over Seven Years proved to be **THE MOST EFFICIENT MEANS OF GRIPPING FOR TRACTOR WHEEL**

BE WISE—Don't make costly experiments

STICK to the proved all-the-year-round 100%-efficient grips and avoid future regrets and expenses



SAVES at least two gallons of fuel per day

GAINS at least two acres per day

Wheels fitted with "McGREGOR's" do not slip—Do not Pack the Soil—May be worked at any time—With any Implement—In any condition of Soil—Where and when farming is profitable. Actually make the Tractor 100% Efficient at the Draw-bar.

Stocks available in all States—Sold by every reputable Tractor Distributor or Dealer.

Whether purchasing a new Tractor or re-equipping your old one INSIST UPON "McGREGOR" GRIPS

MANUFACTURED BY——

McGREGOR WHEEL GRIP & ENGINEERING PTY. LTD.

67-75 RODEN STREET, WEST MELBOURNE

SP
630.5
V645